FEB 27 1924

Registered at the G.P.O., Sydney, for Transmission by Post as a Newspaper. Published Weekly. Price 1s.

Medical Library

THE

MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—11TH YEAR. SYDNEY: SATURDAY, JANUARY 19, 1924. No. 3.

Surgical Instruments

We are pleased to announce that good general stocks of our Surgical Instruments have arrived and that regular supplies are now coming forward. Members of the Profession are cordially invited to visit our Show Rooms.

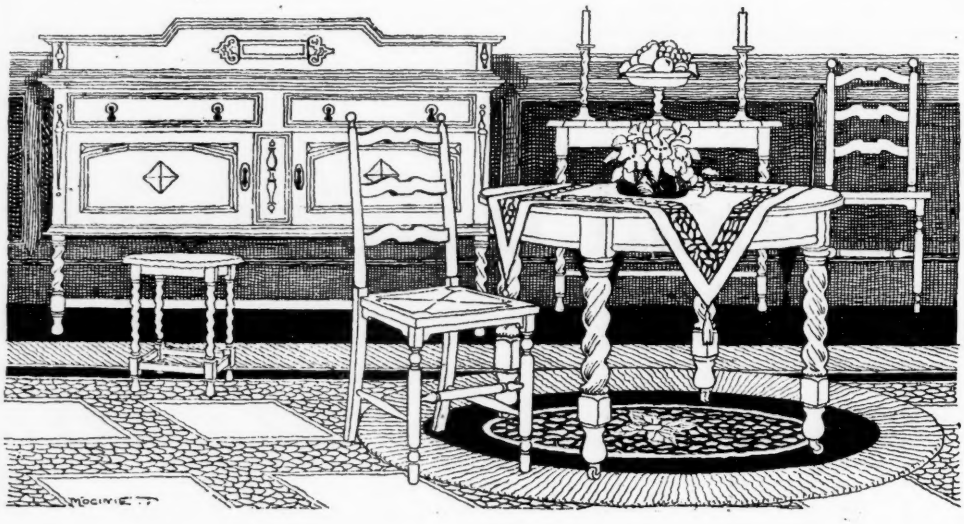
Allen & Hanburys (Australasia) Ltd.

Instrument Makers to H.M. Army and H.M. Navy

AUSTRALASIAN BRANCH:

B.M.A. BUILDING : Elizabeth Street, Sydney

"The present-day search for Economy leads straight back to Quality."



The Dining-Living Room in our £225 Furnishing Scheme

Jacobean Mirror, E1/176	£4/15/-	Oak Jacobean Stool, D4/162	£2/15/-
4 ft. 9 in. Oak Sideboard, B1/209	£19/15/-	4 Small Chairs with rush seats, A3/268 . . .	£8/8/-
4 ft. Oak Circular Table, B6/127 A. F.. . . .	£10/10/-	12 feet. x 9 ft. Axminster Carpet	£11/10/-
Oak Side Table, D7/271	£5/15/-	1 pr. Poplin Curtains and Valance, applique Cretonne at base, with laths and fittings, pair Holland	
6 ft. 6 in. Settee and two Easy Chairs, upholstered and covered in Tissue at 10/6 per yard. A1/267	£39/15/-	Blinds with tucks . .	£5/10/-

Beard Watson & Co. Ltd.
GEORGE STREET. SYDNEY.

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—11TH YEAR. SYDNEY: SATURDAY, JANUARY 19, 1924. No. 3.

Table of Contents

ORIGINAL ARTICLES— PAGE.

"Blood Pressure as the Criterion of Safety in Anæsthesia," by GILBERT BROWN, M.B., Ch.B. 53

"Causes of Depopulation Among Some Island Peoples," by J. H. S. JACKSON, M.B., Ch.B. .. 58

"A Consideration of Certain Points in the Pathology of Malaria with Consequent Suggestions as to its Treatment," by T. STORIE DIXSON, M.B., C.M. 61

REPORTS OF CASES—

"A Case of Familial Cystic Kidney," by JAMES SPRENT, M.C., M.B., Ch.B., L.M. 63

"A Case of Scurvy Occurring in Melbourne," by D. W. NEVILLE, M.B., B.S. 63

REVIEWS—

Therapeutics 64

A RETROSPECT—

Therapeutics 65
Gynæcology 66
Obstetrics 66
Orthopædic Surgery 67
Hygiene 68
Physiology 68

ABSTRACTS FROM CURRENT MEDICAL LITERATURE—

Bacteriology and Immunology 70
Hygiene 71

BRITISH MEDICAL ASSOCIATION NEWS—

Scientific 72
Nominations and Elections 74

CORRESPONDENCE—

"Insulin" 75
Herpes and Varicella 75

PROCEEDINGS OF THE AUSTRALIAN MEDICAL BOARDS—

Queensland 75
Tasmania 75

NAVAL AND MILITARY—

Appointments 75

CONGRESS NOTES—

Transactions of the Australasian Medical Congress (British Medical Association) 76

BOOKS RECEIVED 76

MEDICAL APPOINTMENTS 76

MEDICAL APPOINTMENTS: IMPORTANT NOTICE 76

DIARY FOR THE MONTH 76

EDITORIAL NOTICES 76

BLOOD PRESSURE AS THE CRITERION OF SAFETY IN ANÆSTHESIA.[1]

By GILBERT BROWN, M.B., Ch.B. (Liverpool),

Honorary Anæsthetist to the Adelaide Hospital, Honorary Anæsthetist to the Adelaide Children's Hospital, Visiting Anæsthetist to the Repatriation Hospital, Keswick.

ABOUT twenty-two years ago Cushing noted the importance of estimating the systolic blood pressure during operation. He wrote:[(1)]

> By means of information obtained by this apparatus in the operating room during the past six months on several occasions in critical cases we have been able to anticipate and to avoid profound states of shock and collapse, and indeed in some instances I feel confident that it has been instrumental in saving lives.

This observation was followed up by Howard Kelly,[(2)] Keen,[(3)] Blaull,[(4)] Janeway,[(5)] Bloodgood[(6)] and others. Today it is taught in America that the reading of the blood pressure is the most valuable single means at our disposal for making a pre-operative prognosis and for judging the condition of the patient during and after operation. Curiously enough very little investigation appears to have been made in other countries and no mention of the work is made in the English text-books on anæsthetics.

In the early months of 1921 I anæsthetized several patients during long and serious operations for conditions such as cerebellar tumours and a pituitary cyst. During these operations and at their completion the surgeon inquired as to the condition of the patient. My replies may have satisfied him, but they did not satisfy me. The answers were given on the definite data of pulse rate, respiration rate, colour, length of operation and the amount of anæsthetic used and on the indefinite data of volume of the pulse as determined by palpation and my preconceived estimate of the patient's general condition and reserve. The opinion seemed too empirical and caused me to search for some way in which a definite answer might be made and one which would be a real indication as to prognosis. I had never been taught any method of estimating the patient's condition and could find no help in the available text-books. Lord Kelvin expressed my feelings exactly when he said:

> When you can measure what you are speaking about and express it in numbers, you know something about it; when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the stage of science.

After some inquiry I discovered the method of charting anæsthetics and the chart published by the National Anesthetic Research Society of

[1] Read at a meeting of the South Australian Branch of the British Medical Association on October 25, 1923.

America.[7] The chart, as you will see, gives spaces for many details, but the most important are the lines for marking readings at five minute intervals of the systolic and diastolic blood pressures, pulse and respiration rates. The resulting graph gives the definite accurate knowledge required. My difficulties now seemed to have ended, but in reality were only beginning.

When I wanted to take readings and chart them, the patient refused to stay in the required state of narcosis.

One solution of this seemed to be an assistant anæsthetist for whom the fee would be inadequate. A second solution was a mechanical or semi-automatic anæsthesia. The semi-automatic anæsthesia is satisfactory and may be obtained by using intra-pharyngeal anæsthesia with an apparatus having either hand bellows, foot pump, compressed oxygen or an electric blower.

Secondly my manœuvres with the blood pressure band interfered with the surgeon. This problem was more difficult. At first I placed the arm in an abducted position with the elbow flexed. It was not very convenient for me and was a nuisance to the surgeon in head and neck cases. Finally it nearly caused an action for damages from a patient who recovered from her anæsthetic with a paresis of the arm. There was inability to abduct the arm, to flex or extend the elbow and the pronation and supination were weak. Massage and the electric battery, for both of which I paid "without prejudice," gave a sound arm in about two months' time. A similar accident has been related to me by a surgeon in the country. Attention was first drawn to this accident by Budinger[3] in 1894, but few books on anæsthetics mention it. The mechanism of this condition is uncertain; it may be the nipping of the cords of the brachial plexus between the clavicle and first rib or, as set out in the warning I have since found in a new American book on anæsthetics:[9]

> If the arms are abducted and extended over the head as sometimes occurs in the Trendelenburg position where the arms have been fastened on the breast and break loose from their fastening, or in a breast operation, where it is desirable to have the arms out of the way, a brachial paralysis is prone to follow . . . This type of paralysis is thought to occur from direct extension of the brachial plexus; in an Erb's paralysis the fifth and the sixth cervical nerves are chiefly involved. If the head be turned to the side during the process of over-extension, damage is more pronounced to the plexus on the opposite side since it is put on a greater stretch.

At present I am using a method[10] by which the two tubes from the pressure band are connected to one long rubber tube which carries a three-way piece connecting it with the dial and bellows; they can then be placed on the pillow or the anæsthetist's table. A flat stethoscope chest piece is strapped to the arm and a long single tube connects it to the ear pieces. This is fairly satisfactory though the length of tubing required damps down the note considerably. If, however, the stethoscope transmitter becomes tilted or displaced, the note may disappear altogether. I am trying to devise a better transmitter and a simpler method of fixing it to the arm.

The value of these records has been tested in America by Moots,[11] Miller,[12] McKesson[13] and others from many records they have formulated certain rules.

McKesson's Rule.

McKesson's rule states: "That after a half-hour of sustained low blood pressure and rapid pulse almost every patient succumbs either shortly or within three days of surgical shock and heart exhaustion."

This necessitates a classification of circulatory depression or decompensation. It is best divided for surgical operation into three degrees.

(1) *Safe*: 10% to 15% increase in pulse rate without change in pressure; 10% to 15% decrease in blood pressures without change in pulse rate.

(2) *Dangerous*: 15% to 25% increase in pulse rate, with 15% to 25% decrease in blood pressure.

(3) *Fatal*: Progressively increasing pulse rate above 100 with progressively falling blood pressures of 80 or less systolic and 20 or less pulse pressure, for more than twenty minutes.

It is in third degree or shock to which McKesson's rule refers. Here a vicious circle comes into play. The prolonged hypotension leads to sub-oxygenation of the body tissues and a capillary stasis. The capillary stasis reduces the amount of circulating fluid and the sub-oxygenation of the tissues result in the appearance of various toxic products from imperfect tissue metabolism. All of these collectively further reduce the blood pressure and so the vicious circle goes on. This will continue to a fatal issue unless some link in the chain is broken and the error of the blood pressure overcome.

The time in which shock proves fatal, depends upon the cardiac muscle reserve and the effectiveness of the treatment employed. In a series of one thousand consecutive operative cases, Miller records a death rate of 69.23% among those patients who were in the danger zone for more than thirty minutes.

There have been five post-operative deaths among the patients of whom I have proper graphs. An account of these cases in detail seems worthy of consideration.

Mrs. C., *ætatis* thirty years, suffered from an acute exophthalmic goître of only two months' duration. She was very toxic and had a pulse rate of one hundred and eighty. Anæsthesia was induced in her bedroom and was continued by warmed ether vapour given through a nasal tube. The right lobe, isthmus and half of the left lobe were removed and she left the table in a condition of profound shock which had been present for fifteen minutes. No anæsthetic was given during the last twenty minutes. Pituitary extract, rectal saline solution and brandy were given and oxygen, warmed after bubbling through brandy, administered continuously through the nasal tube. Slight improvement took place and she gained consciousness, but died two and a half hours after the operation was finished.

Shock did not come on till the thyreoid was removed. Probably I ought to have asked the surgeon to stop, pack the wound and return her to bed. The operation might have been completed later. It is interesting to speculate whether this fatality might have been avoided by nitrous oxide and oxygen anæsthesia, oxygen during operation, a two-stage

operation or different after treatment. The impending death, however, could be definitely prognosed from her chart. The restorative treatment of this case certainly was not successful and a search of the literature gave two other methods which might have been tried.

McKesson[14] advocates the administration intravenously of enough saline solution to elevate the systolic blood pressure to within 10% of normal. He considers that gum acacia or gelatine solutions are unsuitable.

Crile[15] advises oxygen under pressure in order to improve the internal respiration and also to give blood transfusion, if available; if not, he gives Bayliss's gum infusion in the hope that internal respiration will be established in the vital organs. He has discarded strychnine, alcohol and camphor. Crile's rules for operation in exophthalmic goître may well be recorded here:

(1) The operative procedure should be graded according to the severity of the case.
(2) The anæsthetic should be nitrous oxide and oxygen.
(3) In moderate cases the entire operation may be completed at one *séance*.
(4) In more severe cases, diminish the thyreoid activity by a preliminary ligation in bed, under nitrous oxide analgesia and local anæsthesia.
(5) In extremely grave cases it may be necessary to diminish the thyreoid activity by multiple steps—boiling water injections, ligation of one vessel, ligation of the second vessel, partial lobectomy, complete lobectomy, allowing intervals of one month or more between the successive steps.
(6) If during operation the safety point is passed, stop the operation, dress the wound with "Flavine" and complete the operation after a few days when conditions are safe.

He records one hundred and twenty-six thyreoidectomies in exophthalmic goître without a goître death. The one death in his series was from double pneumonia.

Keen[16] states: "One of the greatest errors is to allow a patient to remain in a state of low blood pressure in the hope that he will improve through his own resources, reserving a blood transfusion to be used as a last resort after it has become obvious that the patient is going to die."

The second, a patient of sixty-four years, was suffering from a chronic intestinal obstruction which necessitated a prolonged operation with much handling and exposure of intestines and the separation of adhesions. True third stage circulatory depression only just supervened as the operation was completed, but the condition was dangerous. Death took place on the fourth day from acute heart failure.

The third, a weak and toxic man of seventy years, who was suffering from an enlarged prostate, was anæsthetized by nitrous oxide and oxygen with seven cubic centimetres of "Ethanesal." The operation was for cystotomy and only took a few minutes and the man was able to speak five minutes later. But even with this anæsthesia and some re-breathing there was over 25% fall of systolic pressure. He died on the fourth day of cardiac failure.

The fourth, a woman of thirty-nine years, with a severe exophthalmic goître and very marked auricular fibrillation, had three-quarters of the thyreoid removed and left the table in fair condition. She died thirty-six hours later from cardiac failure. The autopsy showed some congestion of the bases of the lungs and tuberculous mesenteric glands.

The fifth, a man in whom partial gastrectomy and gastro-enterostomy were performed for gastric ulcer, left the operating table with only 20% circulatory depression and 2% increase in pulse rate, a very satisfactory state. Death occurred two days later from peritonitis. This accident could not have been anticipated. On carefully analysing the other four cases I found that only the first was absolutely typical of McKesson's rule and this was also the only one in which readings had been taken after the operation was completed.

The American observers advise readings from time to time after the operation has stopped and base their treatment on these readings. Probably in the second case the circulatory depression continued for some time. I debated whether the patients had been graded properly as to risk, as the classification suggested on the charts is slightly involved.

Classification for Surgical Risks.

The classification given on the chart is:

(*a*) *The good risks*: Patients free from organic disease whose surgical condition is not likely to prove fatal.
(*b*) *The fair risks*: Patients suffering from organic disease, but whose surgical condition is not specially serious.
(*c*) *The poor risks*: Patients whose surgical condition is so serious or so far advanced as likely to prove fatal.

The first three were placed in the (*c*) class.

Moot's Rule.

While writing this paper I found Moot's rule[17] for evaluating cardiac reserve: The pressure ratio, a fraction having the pulse pressure as numerator and the diastolic pressure as denominator, may be normal between 40% and 60%. If the ratio is either high or low, there is reason to apprehend danger. If the ratio lies between 25% and 75% the condition is probably operable; if outside these limits it is probably inoperable. Miller investigated this in a series of one thousand patients and found a death rate of 3.23% among those with operable and 23.07% among those with inoperable conditions.

Three of the four fatal cases quoted fall among the "properly inoperable" class, the percentages being all over seventy-five.

Perhaps Moot's rule will be better understood by quoting two cases:

T., *ætatis* forty-seven years, admitted to the Adelaide Hospital on May 2, 1923, suffering from appendicitis. It was decided to operate on the following morning. Unfortunately this woman received the routine pre-operative enema. She was immediately seized with agonizing abdominal pain as the enema had caused the abscess to rupture. A hypodermic injection of morphine and atropine was given and gave some relief. When she entered the operating theatre about two hours later her skin was moist and

cold, her pulse rate one hundred and forty-four, her systolic and diastolic blood pressure one hundred and thirty and ninety millimetres respectively. Applying Moot rule, we get $\frac{\text{pulse pressure}}{\text{diastolic pressure}} = \frac{20}{90}$ or 22%; she was therefore placed in the probably inoperative class.

Nitrous oxide and oxygen with the addition of a little ether was administered and the appendix removed, drainage tubes were inserted both through the abdominal wound and a posterior colpotomy. Consciousness was regained five minutes later and the patient recovered.

The other case I can show no chart:

Mr. S., a patient of Dr. K. Bollen, suffered from very severe myocarditis. His usual blood pressure was 100 and 85 millimetres which gives a pressure ratio of 17%.

It was necessary to remove eight teeth and some of them were almost submerged stumps.

He was kept in bed for seven weeks and digitalis administered. When examined on June 24, 1923, his pressures were 110 and 80 millimetres. Nitrous oxide and oxygen was administered through the nose by means of Hydebrink's apparatus, the induction required two minutes, the extraction five and a quarter minutes; thirty-five seconds later he recovered consciousness none the worse for his adventure.

The next history shows marked circulatory depression with eventual recovery.

S.C., *ætatis* twenty-one years, had a prolonged anæsthesia for laminectomy for probable tumour of the *cauda equina*. He was in a cramped position and caused me much anxiety throughout. At the close of the operation his pulse rate was one hundred and sixty, his systolic blood pressure eighty millimetres and pulse pressure twenty. The house surgeon took the pressures one hour later and again in four hours and found them no better. Large doses of pituitary extract, salines and careful attention show him as an exception to the rule.

The next history illustrates the advantage of definite knowledge as to resistance of the patient and the possibility of prolonging an operation.

H.D., *ætatis* twenty-six years, a returned soldier, was suffering from a large tubercular kidney and in very poor condition. He was under the care of Dr. John Corbin at the Repatriation Hospital, Keswick. Nitrous oxide and oxygen anæsthesia appeared his only hope and was given, Marshall's apparatus being used. The kidney was removed with difficulty and the ureter followed down. At 5.40 the surgeon inquired as to the condition and was informed that more than twenty minutes further operation would probably mean a fatality. The operation was quickly completed and a good recovery resulted after a rather stormy convalescence.

Those unused to this form of anesthesia in major surgery will be interested to notice that the patient recovered consciousness within five minutes of a severe operation lasting nearly two hours.

The next history shows the great use of the method in a patient who was in a constrained position and in whom it was not possible to examine the corneal reflext or even see the face during the operation.

R.C.H. was a returned soldier under the care of Dr. Newland at the Repatriation Hospital, Keswick. The operation was for the removal of a piece of shrapnel from the cervical spinal canal.

After anæsthesia was induced, an intra-tracheal catheter was passed and anæsthesia maintained through it by Lidwill's apparatus.

The man was placed flat on his face and kept in that position for one and a half hours. The narcosis was satisfactory and the blood pressure depression was less than 10%. Without the definite information given by the chart this would have been a very worrying case for the anæsthetist.

The question of the extent of surgical interference permissible in a particular patient is a matter of very great importance. By this method of charting anæsthetics it may be determined accurately whether additional work may be done by the surgeon and the operation completed in one sitting or whether a two or three stage operation is safer.

The following three histories illustrate this well, for in each case the operation might have been performed in two or more stages. However, it was possible to say definitely after the first stage that the operation might be completed in one sitting.

Mrs. A.P. was under the care of Dr. John Corbin at the Adelaide Hospital. She was very ill with a pyonephrosis on the left side and the skiagram revealed a calculus in both kidneys. The calculus on the right side was removed and the condition was so good that the other calculus was removed and the left kidney drained. The recovery was good.

M.L., a powerful old man of eighty-four years, was suffering from a fairly extensive epithelioma of the tip of the nose. He was a patient of Dr. Newland.

The growth was excised; flaps were raised from the cheeks to form a lining for a rhinoplasty formed by a pedicle flap from the scalp. Then the scalp defect was filled by a Wolff graft from the arm. This rather formidable proceeding, an operation of over two hours in a man of eighty-four years, might have been performed in several stages, had not the chart shown that further surgery was permissible.

B., also a patient of Dr. Newland, was suffering from an epithelioma involving the cheek, lower jaw and palate. The anæsthesia chosen was intra-tracheal sufflation of ether vapour applied by means of a modified Connell's apparatus.

A block dissection of the right side of the neck including the sterno-mastoid muscle was followed by the removal of half of the lower jaw, part of the cheek and hard and soft palate. The duration of the operation was two and a half hours. Third stage depression was almost reached, but the recovery was very good.

The depression of blood pressure shown between 9.30 and 9.40 was due to overdose of anæsthetic due to a fault in the needle valve of the ether chamber.

Value of Charts in Bad Risks.

The pre-operative prognosis and definite knowledge of the course of operation are very comforting to the anæsthetist when the patient is a very bad "risk." In the case of a fatality the charts should be valuable evidence in the coroner's court.

The following two histories illustrate this.

Dr. Parkhouse telephoned to me to make arrangements for an anæsthetic on the following day. An inquiry as to the condition of the patient elicited the information that it was a nervous child of seven years who had suffered from scarlet fever complicated by severe nephritis, followed by double broncho-pneumonia and that she then had an empyema of the right side and possibly of the left side.

The operation was successfully performed on the right side and four days later on the left. At the second operation the pulse rate was one hundred and sixty, the respirations forty-eight and the blood pressures ninety and sixty-nine millimetres. Warmed "Ethanesal" and oxygen vapour were the anæsthetics chosen and the operation completed without a fatality.[1]

[1] Dr. Parkhouse reports that the child died fourteen days later from exhaustion.

Mrs. K., *ætatis* thirty-six years, suffering from splenic anæmia, had required a whole blood transfusion, but her hæmoglobin value was still only 30%. This according to von Mikulicz[18] is the lowest percentage at which an operation may be attempted, while others think that 40% should be the lowest limit.

Splenectomy was performed by Dr. Newland and the condition was so good that he was able to suture the abdominal wound in layers instead of by through and through sutures as had been anticipated.

The Effect of Different Surgical Procedures.

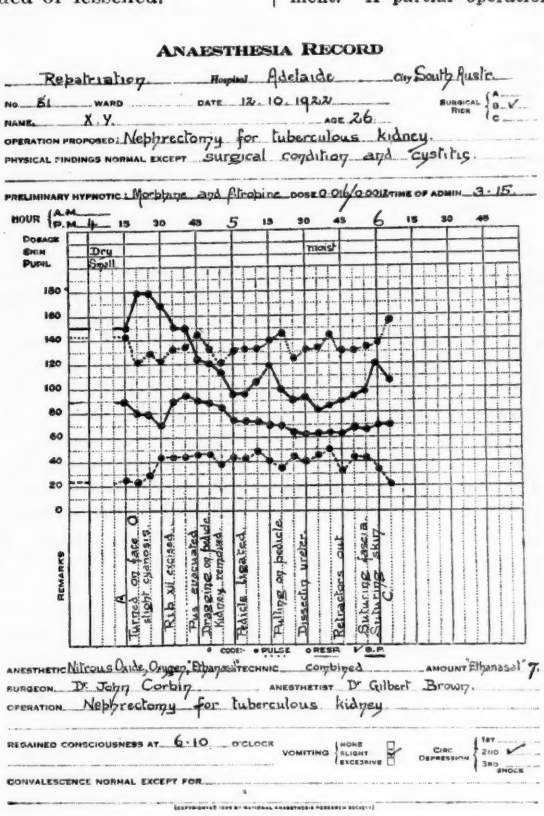
The use of this method teaches the effect of different surgical procedures and consequently the technique of the surgeon or anæsthetist may be altered and depression avoided or lessened.

To show this graphically is of very great advantage in the teaching of students.

Crile[19] has demonstrated in anæsthetized animals that the blood pressure is raised by cutting the skin, stretching nerve trunks, dilating the anus, carrying out manipulation of the uterus, crushing the turbinate bones and sometimes by cutting muscles.

The blood pressure he found to be lowered by prolonged exposure of the skin, chest, brain or abdominal viscera to air, manipulation of the parietal peritoneum, the larynx and the posterior nares, by crushing the testicle, by extensive division of muscles and by spinal anæsthesia.

Very little if any alteration took place in the blood pressure in sawing bones, opening joints, gentle separation of the *dura mater*, interference with the brain or manipulation of the liver, so long as the factors of hæmorrhage, rough handling or exposure were not also introduced.


ANAESTHESIA RECORD
Repatriation Hospital Adelaide City South Aust.
No. 81 WARD DATE 12. 10. 1923
NAME. X. Y. AGE 26
OPERATION PROPOSED: Nephrectomy for tuberculous kidney.
PHYSICAL FINDINGS NORMAL EXCEPT Surgical condition and cystitis.
PRELIMINARY HYPNOTIC: Morphine and Atropine DOSE 0.016/0.0002 TIME OF ADMIN. 3.15.
HOUR A.M. P.M. 4 15 30 45 5 15 30 45 6 15 30 45
DOSAGE
SKIN Dry moist
PUPIL Spell
180 160 140 120 100 80 60 40 20 0
REMARKS
A Turned on gas O slight cyanosis.
R.H. XI exposed.
Pain eliminated. Dragging on pedicle. Kidney removed.
Pedicle ligatured.
Pulling on pedicle.
Dissecting ureter.
Retractors out.
Sutured fascia. Sutured skin. C.D.
CODE: PULSE RESP B.P.
ANESTHETIC Nitrous Oxide, Oxygen, Ethanesal TECHNIC Combined AMOUNT Ethanesal 7.
SURGEON Dr. John Corbin ANESTHETIST Dr. Gilbert Brown.
OPERATION Nephrectomy for tuberculous kidney
REGAINED CONSCIOUSNESS AT 6.10 O'CLOCK
VOMITING NONE SLIGHT EXCESSIVE
CIRC. DEPRESSION 1ST 2ND 3RD SHOCK
CONVALESCENCE NORMAL EXCEPT FOR

The next six histories will show the effect of certain surgical procedures.

R.C.F. was operated upon by Dr. Jay for double *otitis media*. A radical operation was performed on both sides; the whole proceeding took two hours and forty-five minutes. The blood pressure was depressed less than 2% and the pulse rate was unaltered.

I have graphs of some six mastoid operations and they all show the same lack of depression.

J.H., *ætatis* fifty years, was operated on by Dr. Newland for *tic douloureux*. The fifth nerve root was divided proximal to the Gasserian ganglion. The man was anæsthetized and then raised to the sitting position, which caused 15% depression in his systolic blood pressure. There was, however, very little hæmorrhage and two hours and thirty-five minutes later there was only 7% further depression.

A man, aged sixty-two years, suffered from a malignant disease of the right tonsil and enlarged cervical glands. According to Moot's rule he was a bad risk as his pressure ratio was 100%.

His pressures began to fall soon after dissection of the neck began and later fell very rapidly and he became very ill. It was found that the vagus nerve had been ligatured in two places. When these ligatures were removed, his condition improved immediately, but it was thought wise to defer the excision of the primary growth to a second operation.

Mrs. S., *ætatis* seventy-two years, suffered from a large fungating carcinoma of the breast and glandular enlargement. A partial operation was performed to make the condition less unpleasant and allow of X-ray treatment. Strong traction on the tumour produced a depression of fifty millimetres of mercury in the systolic pressure and forty millimetres in the diastolic. This effect was not recovered from to any marked extent.

J.S., *ætatis* forty-eight years, showed the momentary effect caused by an endeavour to reduce a dislocated neck by manipulation. A 30% increase in pressure was caused, falling in one minute to the original level, for clearness it is shown on the chart as a five minute period.

F.S., *ætatis* forty-three years, was operated upon by Mr. Hamilton Russell for excision of a ureteral structure. The chart showed the increase of pressure caused by struggling during induction of anæsthesia and a still further increase by the trussing used to give the extreme lithotomy position. The very gentle surgery which followed, caused comparatively little depression.

Value of Nitrous Oxide and Oxygen Anæsthesia.

Anæsthesia for major operations by nitrous oxide and oxygen with or without an adjuvant of "Ethanesal" or ether, has very many advantages. The induction is pleasant, the recovery very rapid and usually without nausea or vomiting, so that nourishment may be given at once and nursing is lighter, but perhaps the greatest advantage is the manner in which the blood pressure is sustained and shock minimized.

R.N., *ætatis* forty-six years, suffered from pyloric stenosis, was in poor general condition. He was anæsthetized with nitrous oxide and oxygen and Dr. Newland excised the pylorus and performed a posterior gastro-enterostomy. A little ether was added to give proper relaxation while the pylorus was pulled down and mobilized and again while the peritoneum was closed. The operation lasted one hour and forty minutes and the man regained consciousness five minutes later.

The depression was less than 20% and the patient only vomited slightly once.

S.G., *ætatis* forty-two years, suffered from a pneumococcal empyema and he was a "poor anæsthetic risk" and had a pressure ratio of 82%. Under nitrous oxide and oxygen anæsthesia a rib was resected, pus and lymph were evacuated, the cavity was swabbed out and the chest was closed. Less than two minutes later the man regained consciousness with only 7% circulatory depression. He was able to have a meal on returning to the ward.

The primary rise of the systolic pressure was due to an imperfect mixture containing too much nitrous oxide and to excess of re-breathing in an endeavour to raise the air pressure in the lung.

I have to thank the various surgeons who have allowed me to use the records taken from their cases and also Mr. Geoffrey Morey for photographs and help in the preparation of lantern slides.

Conclusions.

(1) The patient has a right to expect a fairly exact pre-operative, operative and post-operative prognosis.

(2) This may be obtained by the proper interpretation of the blood pressure and by charting the blood pressure, pulse and respiration during all operations in which there is possibility of circulatory disturbances.

(3) In our present state of knowledge there is no other means of obtaining this information.

(4) If during an operation the systolic blood pressure falls to eighty millimetres or less and the pulse pressure to twenty or less with a pulse rate of one hundred, the operation should be terminated as quickly as possible and restoratives measures employed. If this circulatory depression continues for more than twenty minutes, the patient will probably die within three days.

(5) Whenever possible the anæsthetist should examine the patient fully a day or two before the operation.

(6) The surgeon and the public must be taught that safety lies in having an expert anæsthetist and that like any other expert, if he is to obtain a living as such, he must be well paid, otherwise he cannot devote his whole time to the specialty.

References.

(1) Harvey Cushing: *Annals of Surgery*, 1902, page 321.

(2) Howard Kelly: "Operative Gynæcology."

(3) Keen's "Surgery," Volume VIII.

(4) Blaull: *Annals of Surgery*, 1902, page 303.

(5) H. H. Janeway: *Annals of Surgery*, 1905.

(6) J. C. Bloodgood: *Annals of Surgery*, 1913, page 721; "Studies in Blood Pressures Before, During and After Operation, with Reference to the Early Recognition, Prevention and Treatment of Shock."

(7) *Bulletin of the National Anesthesia Research Society*, September, 1920.

(8) Budinger: *Centralblatt für Chirurgie*, 1894.

(9) P. J. Flagg: "The Art of Anæsthesia," page 40.

(10) A. H. Miller: "Blood Pressure in Operative Surgery," *The Journal of the American Medical Association*, 1920, page 514.

(11) C. M. Moots: "Observations on Blood Pressures During Operations," *American Journal of Obstetrics*, 1916, page 996.

(12) A. H. Miller: *Loco citato.*

(13) E. I. McKesson: *The Journal of the American Medical Association*, 1917, page 404.

(14) *Ibidem.*

(15) G. W. Crile: "A Physical Interpretation of Shock, Exhaustion and Restoration."

(16) Keen's "Surgery," Volume VIII., page 420.

(17) *American Journal of Obstetrics*, 1916, page 996.

(18) Stewart McKay: Preparation and After Treatment of Section Cases."

(19) G. W. Crile: "A Physical Interpretation of Shock, Exhaustion and Restoration."

CAUSES OF DEPOPULATION AMONG SOME ISLAND PEOPLES.[1]

By J. H. S. JACKSON, M.B., Ch.B. (Melbourne),
Medical Officer, Kaewieng District, Mandated Territory of New Guinea.

FOR those who are not familiar with late German New Guinea it seems desirable to preface this article with some information about the geographical situation of the islands under discussion.

The district of Kaewieng is only one of the many spheres of administrative activity into which the mandated territory has been subdivided. The islands in this division are the northern half of New Ireland, New Hanover, the Tabar Group and the St. Matthias Group. In addition to these there are many smaller islands situated between the northern end of New Ireland and the southern coast of New Hanover. The whole of the district is situated within two or three degrees of the Equator in the North-West Pacific.

The native population of the islands is estimated to be about twenty-five thousand and this is probably close to the mark. The district is the most civilized in the territory and so it has been possible to enter any village for the purpose of taking a census and for the medical examination of all natives.

In every census taken on patrol either by myself or by one of my assistants it was found that the deaths always exceeded the births. To support my statement, let me quote some figures from patrol reports (see Table I., page 59).

The crude death rate in Australia in 1921 was 9.9, whilst the crude birth rate was 24.95. The crude rate is the number of deaths or births per thousand of mean annual population.

It is not claimed that my census figures are absolutely accurate. There are many difficulties in carrying out thorough medical examination and treatment. For our own purpose, however, they show that in each of the groups the total population is diminishing. It is my intention to investigate in this paper, as far as possible, the most probable causes of this, laying stress on those which I deem the most important.

What is the effect of close contact with civilization? The adoption of the white man's attire and habits to the exclusion of their own more primitive but hereditary practices is apt, I say it advisedly, to lessen the native's interest in his existence and

[1] Read at a meeting of the Ipswich Medical Society on October 18, 1923.

TABLE I.

BIRTHS AND DEATHS, PER 1,000 OF POPULATION, KAEWIENG DISTRICT, 1923.

District.	Population.		Births.		Deaths.	
	Male.	Female.	Number.	Per 1,000.	Number.	Per 1,000.
New Hanover	3,373	2,404	132	22.8	229	39.6
St. Matthias	1,258	983	28	22.3	92	45.03
Island Group (Kaewieng vicinity)	1,267	786	58	28.2	125	60.8
Tabar Group	2,358		28	11.8	92	39.2
New Ireland (West Coast)	2,778		114	41.03	183	65.8

to loosen his hold upon life. This then is one of the causes of mortality.

It will be noted from the tables I submit to you that the birth rate is, with the exception of the Tabar Group, quite a reasonable one. The death rate in all, however, is out of all proportion. The deaths occurring in the first few years of life form the great majority of the whole. It has been found impossible to estimate the total number of abortions and still-births, but it is undoubtedly high, if we can judge by the patients who come to hospital. These come from the vicinity of the Kaewieng Settlement only.

Among occasional causes of mortality it has to be remembered that the native of this district is so saturated in superstition that he may die at the behest of a witch doctor or an hereditary enemy, without any definable physical reason for doing so. That he is occasionally poisoned and more often commits suicide is true, but probably these accidents occur more rarely than in a white community.

As regards abortion for many years and from many different points of view, missionaries and others have discussed the burning question as to whether or not natives use emmenagogues to terminate pregnancy. On all patrols this has been closely inquired into. That they do use native drugs for this purpose is certain, but the efficiency of such things is, I think, doubtful. In the Tabar Group I closely questioned ten women, all of whom had taken an infusion of a certain root in childhood to prevent pregnancy in later years. All these women were menstruating regularly and normally. Two of them had had children. But in this group I became aware of the fact that they had a much surer method of producing the result they desired. It was interesting to find, however, that it was considered necessary to kill the fœtus *in utero* before attempting to bring about abortion. The method adopted could hardly have produced the required effect except in the later stages of pregnancy. The woman chose a high bank from which she threw herself prone upon the surface of the sea or river. Abortion was subsequently attained by means of the stem of a certain plant chosen, as I understand, for its smooth and pliable qualities and not for any supposed intrinsic power it may possess. It seemed more logical to treat the latter method as much the more important of the two. If successful in producing the death of the fœtus by the first method the use of mechanical means later was probably unnecessary.

Infanticide, although practised before the arrival of the missionary, does not exist, so far as it is possible to determine, at any rate in the groups under discussion. In some cases an undesired child was strangled and in others exposed at night to all the vagaries of the tropical climate. It is stated that if the child survived the latter treatment, it was generally reared.

Infanticide was never practised as a ceremonial sacrifice, but as a vital necessity, consequent upon over-crowding and food shortage. With a declining population the problems of supporting a family have become less difficult, year by year, as the islands rarely suffer from drought.

The sexual life of a native woman is not the ideal affair it is often supposed to be. Pregnancy, when it does occur, is really a distressing interlude in a dreary existence. As a beast of burden her duties to her lord and master must not cease, either during her term or subsequent to her confinement. She must work in the gardens and carry home each day heavy loads of taro, the daily ration for a hungry family. She gives birth to her baby squatting on the floor of a dirty hut and attended by some old crone who cuts the cord with the sharp edge of a dirty shell. There is no rest during the puerperium. On the very next day she is to be seen coming back from the gardens laden with a heavy load of native foods, her baby slung on her back being a further impediment.

I have examined a great number of native women in villages, who have had children. I found much sub-involution and congestion, often followed by acute angled retroflexion. These conditions must lessen the chance of conception and favour the chances of abortion in the early months of pregnancy. Often pelvic lacerations were found to add their quota both to sterility and abortion.

It is a gross misrepresentation of fact to state that native women do not suffer either in or after pregnancy. The same pelvic pathological conditions

occur as in any white community. The penalties of sepsis are just as great, although figures are necessarily difficult to obtain. Of the women examined in the Kaewieng Hospital a large number either suffer from malposition of the uterus or from endometritis and cervical catarrh. This is precisely what we should expect knowing the intimate details and circumstances of native conditions.

Lactation is an affair of great moment—an asset of some importance in the domestic economy of the native household. It may be that another pregnancy is undesirable, but it is, nevertheless, a fact that many native women suckle their children until they are three or four years of age. Consequently, impregnation, although not impossible, is decidedly improbable. Again, intimate connexion is taboo at certain seasons and festivals and until the child can walk. It must be admitted that such a custom interferes to some extent with the natural propagation of their race.

Among other things which have their influence, a considerable number of young men are married to women who have reached their climacteric; and there are not wanting old men, palpably impotent, married to young women. Many of the virile men are recruited for plantations so far from their own villages that they have no opportunity of cohabiting with their wives.

Nowadays, however, native customs interfere far less with decline in population than abnormal uterine conditions. In this connexion it seems advisable to quote figures to show that venereal disease amongst natives is not such an important factor in producing either sterility or abortion as is usually claimed.

On my arrival in the district I was informed that the native population was very badly infected with syphilis and gonorrhœa. It seemed hard to believe, considering the fact that the total white population was about sixty. It is scarcely necessary to point out that these diseases almost certainly come with European civilization. Gonorrhœa is mentioned by one writer as the cause of 85% of sterility. I do not concur with this opinion. Look at the figures of the various examinations I have made.

TABLE II.

Districts.	Population.	Gonorrhœa.
St. Matthias	2,241	Nil
Island Group, Kaewieng vicinity ..	2,053	1
Tabar Group.. ..	2,358	5
New Ireland.. ..	2,778	4
Whole Area	9,430	10

This represents a percentage of 0.001. I have intentionally omitted those divisions of the district in which I have any reason to believe that the figures are not fairly complete or reliable. It is notable that the sole case occurring in the Island Group was unearthed on Nusa Island opposite and within half a kilometre of Kaewieng. As far as the population in the Kaewieng District is concerned, gonorrhœa is not in evidence. This should be sufficient evidence to convince people who credit the mandated territory with a record number suffering from venereal diseases, that they are in error.

It is well to point out that on out-stations leucorrhœa in women and balanitis in men are often diagnosed as gonorrhœa. On patrol it is, of course, impossible to carry out accurate bacteriological diagnosis and it must not be forgotten that the medical officer does not always do the patrol and that all examinations in that case are performed by an assistant. The result of these conditions is that in official reports innocuous affections are sometimes classified as gonorrhœa.

Syphilis presents as regards diagnosis a difficult problem. It is a well-known fact that in frambœsia (endemic in this region) the serum gives a Wasserman reaction. And this is not the only tropical disease that does so. In the tropics, therefore, one is dependent more on clinical appearances than on accurate serological diagnosis. I have not been able to find *Spironema pallida* in any sore that I have examined. I have never seen a gumma nor have I seen the secondary and tertiary signs of this disease in a native. Other medical men may have seen *locomotor ataxia*, but although I have examined fifteen thousand natives, I confidently assert that I have not seen ataxia or any case which I could be sure was syphilis.

While admitting the fact that such a cursory examination as is possible on patrol tends to be misleading, I have come to the conclusion that syphilis, if it exists at all, is very rare in this district. I have based my opinion on the following facts.

(1) The clinical examination of over fifteen thousand natives has not revealed a single case with a typical primary sore.

(2) Ulcers which might possibly be syphilitic, do not yield to specific treatment.

(3) *Locomotor ataxia* and para-syphilitic lesions are conspicuous by their absence.

(4) In the Kaewieng districts I have never seen a child suffering from hereditary syphilis.

I do not think that I have taken these facts too seriously. Abortions, still-births and premature babies are very common, but, as I will point out later, there is every reason to believe that they are due in the majority of cases to malaria or to pelvic conditions not syphilitic in origin.

The common conditions which might cause some doubt in a medical officer's mind, are: (i.) The sabre tibia of frambœsia which may be confounded with a similar deformity due to gummatous periostitis, (ii.) gangosa, an ulcerative condition of the pharynx, palate and nose. The ætiology is doubtful, but it is probably a late sequel of frambœsia.

Neither of these conditions have benefited by the exhibition of mercury or the iodides. What is the effect of the endemic diseases of the region? The five main endemic diseases are: frambœsia, hookworm, filariasis, malaria and dysentery.

The three former diseases cannot be considered fatal *per se*. Frambœsia and hookworm are almost universal. It is only in their later and advanced stages that they become an important factor in the death rate and even then patients generally die of an intercurrent affection to which a reduced constitution can offer little or no resistance.

During the year 1922 there were no epidemics of any importance. A small outbreak of measles occurred on the west coast. It was strictly local and no deaths were reported. A small outbreak of bacillary dysentery occurred on the east coast on one of the plantations. This outbreak did not spread and there were no deaths. We can, therefore, omit any further mention of fatal epidemics in discussing the statistics for 1922.

We finally come to the consideration of what seems to be the great scourge of the district, namely malaria. Its influence on both birth and death rates is greater than that of all other factors.

In order to judge the proportion of the population suffering from this disease a sufficient indication is obtained to determine its prevalence by taking a spleen index. The value of the figures obtained must not be considered accurate for two reasons. Firstly, the spleen index of old men is often not indicative of the disease because the spleen has shrunk, but blood examination proves that they are infected. Secondly, there is difficulty in detecting slight enlargements of the spleen when it is soft. Enlargement of the spleen in malaria can be considered as evidence of the fact that the patient has acquired a certain immunity to the disease. It is notable that adult natives suffer less from malaria than adult white people. Native children, however, do not stand infection very well. Estimating in this way we find that nearly 80% of the total population are infected.

Among the native races malaria is directly associated with the causation of miscarriage, still births, premature births and infant mortality.

It is easy to see that its effect upon population is a very potent one. Malaria is, after all, the greatest scourge of the tropics and it probably always has been.

Now I cannot claim to have touched on every phase of this immense subject, but at any rate I think that to-night we have examined together some very important points.

If these island races are doomed, which I am optimistic enough to doubt, it is still possible to delay their final extinction. Thorough patrolling and treatment of hookworm disease and frambœsia has been and is being carried out by the Administration. So far malaria has not been thoroughly tackled. One of the chief reasons for this is that the Administration has not got the money at its command to carry out extensive prophylactic measures throughout the whole territory against the anopheline mosquito.

There are two principal measures which have been employed in other parts of the world. Both will have to be employed in the territory. They are: (1) Quinine prophylaxis and (ii.) sanitary and engineering construction suitable for the elimination of mosquito breeding places. Both are important, but the latter is by far the more so and at the same time is the more difficult. Nevertheless the ultimate goal is the drainage of anopheline areas, though it may take years. Herein is the need for engineers. Their work is especially required in those areas which are only occupied by the native races.

With regard to quinine prophylaxis I quote from Malcolm Watson:

> We have seen that quinine at its best and when administered with a thoroughness, the result of a discipline impossible of attainment in an ordinary population, still leaves a large percentage of the population capable of infecting others. It can, therefore, never eradicate malaria in the presence of newcomers and where there are many anophelines. We have seen, too, that to attain this best result in malarious places costs a fairly considerable sum. Quinine, therefore, in my opinion, cannot for a moment be ranked with drainage.

A CONSIDERATION OF CERTAIN POINTS IN THE PATHOLOGY OF MALARIA WITH CONSEQUENT SUGGESTIONS AS TO ITS TREATMENT.

By T. STORIE DIXSON, M.B., C.M.,

Knight of Grace of the Order of St. John, Honorary Consulting Physician to the Sydney Hospital and Lady Edeline Hospital for Infants, President of the New South Wales Board of Medical Registration.

At the Section of Physiology and Pharmacology at the Annual Meeting of the British Medical Association, held in 1920, Professor W. Ramsden is reported by *The British Medical Journal* of July 24 of that year as stating that:

> It is extremely difficult to bring the concentration of quinine in the blood up to 10 milligrammes per litre; the highest figure observed was 16.6 milligrammes and was associated with symptoms of quinine poisoning so grave that we regard that concentration if maintained for some hours as not remote from the extreme limit compatible with life. Even that concentration although in one case maintained during forty-eight hours failed to effect a radical cure of the patient's benign tertian malaria. It is concluded that failure to cure malaria by quinine is not due to failure to attain, within the limits of the tolerable, sufficient concentration of the drug in the blood.

In the discussion Major H. W. Acton said:

> Relapses of benign tertian often occur immediately after quinine treatment indicating that the parasites must be very near febrile limits. We know that small doses of quinine (one to three grains) are insufficient to control fever, whilst large doses (forty-five to ninety grains) do not increase the cure rate. These large doses only upset the digestion and produce diarrhœa consequently a large amount of the alkaloid is not absorbed.

Let us now consider the signs and symptoms indicating disturbances of the liver. In cases of malaria Captain Hele[1] says: "In 1919 in active malaria there was always increased output of urobilin. When there was blood destruction the urine had the

characteristic colour of urobilinuria which could be recognized from a distance without tests."

Manson[2] says: "Polycholia is a constant and often an urgent feature of most malarial fevers. For bilious remittant the icteric tinting of the skin is earlier than in yellow fever." Even as regards blackwater fever, may I quote from Colonel A. G. Phear:[3] "In almost every one of seventy-eight cases of blackwater fever there was enlargement and tenderness of the liver; this was in many cases associated with vomiting and jaundice. The degree of jaundice varied from a slight icteric tint to a deep coloration of the skin and afforded a reliable indication of the seriousness of the case. Of thirty cases there was well marked jaundice and in seventeen the generalized icteric staining of the skin was intense."

In regard to the morbid anatomy of the liver in cases of malaria, Castellani and Chambers[4] state that among the lesions produced by *Laverania malariæ* (sub-tertian malarial fever) it is found that the liver is generally enlarged and that it varies in colour from dark brown to a slate one; also that it is soft and congested and the outlines of the lobules usually indistinct, whilst the gall bladder is full of dark coloured bile. In regard to the morbid anatomy of chronic malaria the lesions fall principally upon the spleen, liver and bone marrow and in chronic malaria without definition of the parasite the liver is larger and harder than usual and in malarial cachexia the liver is enormously enlarged.

In seeking for a succinct description of the influence of malaria upon the liver, that given by Coplin[5] seemed to me particularly clear.

> Hæmatogenous jaundice is seen in connexion with various morbid processes in which blood destruction constitutes an important element. It is the erythrocytolysis (hæmolysis) of yellow fever, pyæmia, pernicious anæmia, malaria and allied conditions with which this form of jaundice is especially connected. It has been shown that destruction of the blood cells leads to a production of a bile the viscosity of which prevents rapid flow through the bile capillaries and hence permits regurgitation or at least, increases the biliary pressures to an extent compatible with absorption. At the same time there is a more or less catarrhal swelling of the mucosa of the biliary passages which further impedes the flow. The jaundice then is truly obstructive and not actually of hæmatogenous origin although the initial step in the process was probably the erythrocytolysis.

Speaking of the malarial liver, he goes on to say that the gall bladder is usually small and does not extend to the margin of the liver. The contained bile is commonly tarry or thick and ropy. In the acute stages of malaria the hepatic changes resemble those in certain bacterial affections; the organ is swollen, the epithelium granular, sometimes fatty, areas of focal necrosis occur and the biliary passages are not infrequently the seat of a well marked catarrhal cholangitis.

From the above it may be deduced that special attention should be paid to avoidance of irritation of the stomach and to facilitation of relief from blockage of the liver and its ducts with thickened bile. This latter effect seems to be the most reasonable explanation of the reputation earned by the intensely nauseous purgative Warburg's tincture, each fifteen mil (half ounce) dose of which has only 0.24 gramme (four grains) of quinine sulphate, but 0.36 gramme (six grains) of socotrine aloes; the said dose is to be repeated in half an hour.

This explanation applies to the quinine-rhubarb compound tablet vulgarly named "Livingstone Rousers" which contain only 0.06 gramme (one grain) of acid quinine sulphate, but 0.09 gramme (one and a half grain) of jalap and of rhubarb respectively with 0.06 gramme (one grain) of calomel. It is possible that the acid form of quinine salt would tend to give increase of energy to the calomel. I know one very experienced medical practitioner who places his reliance on this drug solely. Little as is the quinine present in this tablet, the large dose of aperients must surely make its absorption as it passes through the duodenum insignificant.

Then too Simpson's mixture contains to every dose (thirty mils) only 0.12 gramme (two grains) of quinine sulphate to one gramme of magnesium sulphate. It is to be given every four hours and hence at most only 0.72 gramme (twelve grains) of quinine would be given in a day. Finally Dr. Forbes Leslie claims success from calomel given alone without quinine.

It is commonly enough advised that calomel be given as a preliminary to quinine administration. But it is only as a preliminary.

When those too common chronic cases come under our notice where the patients have been dosed with quinine by mouth or intra-muscularly or both and not only left uncured, but with all faith in treatment shaken, their stomachs rebellious to even small doses of quinine, what can we do?

Pharmacology has for many years shown that quinine is a poison to protoplasm, hence if given in large doses little diluted it must sooner or later cause gastric irritation. What then must it do when injected hypodermically or intra-muscularly, even if by hypodermoclysis? The injury to the tissues, entailing great pain, necroses or even suppuration of the part, with death perhaps from tetanus has rendered this method, it is to be hoped, obsolete. Moreover, there is less excuse for using this method not only because of the results obtained by trustworthy experimenters, who have proved that the absorption of quinine is far faster when given orally (approaching indeed that even when given intravenously) than when given intra-muscularly as shown by its quicker excretion in the urine, but because Kenneth McLay[6] found that the parasites disappear from the blood films earlier under oral administration than under the intra-muscular or subcutaneous. If it is objected that the stomach rebels when quinine is given, it will be found that it is the method of its administration which is generally at fault; for if small doses well diluted be given, even the digestive trouble due to the malaria will as a rule disappear.

Summed up the method which I have found eminently successful in those cases of chronic malaria which I have latterly met is as follows:[7]

Give 0.18 to 0.24 gramme (three to four grains) doses of quinine hydrochloride in uncoated pill form with ninety to one hundred and twenty cubic centimetres of water four times a day for two months with 0.06 gramme of calomel at night and a saline draught next morning, for a week or two, then less often. The diet should not contain anything acid lest the calomel purge too freely. With this the stomach is not upset; lost appetite very soon returns indeed; there are no nerve symptoms. The course can be carried out readily for the drugs are easily portable and less expensive than usual since less quinine is used and otherwise there are no discomforts worth mentioning. Indeed persistent malarial headaches rapidly disappear without other special treatment.

Although the cause of blackwater fever is still undecided, the hepatic conditions would indicate that the treatment by quinine upheld by some might be greatly aided by a simultaneously continuous one by calomel.

While I do not pretend that every patient treated as above will be cured, undoubtedly a large number of those unfortunates who have lost all faith in quinine and are content to put up with their discomfort, may at little expense be removed from the list of invalids and so enabled to earn their living in a way previously impossible.

One case will illustrate what may occur. An officer who had been in Palestine dosed with quinine freely and apparently cured, had a severe relapse when approaching Australia on his return. He was again treated with 2.4 grammes of quinine hydrochloride daily by mouth and several large doses intra-muscularly, but again relapsed severely. Yet treatment as above outlined rapidly restored his health. It is four years ago and in the meantime he has done extensive surf bathing and gone through severe vicissitudes of weather, yet had no relapse.

No one in meditating over malaria, its widespread diffusion, its malignity, its devastation of human life can help thinking of Sir Ronald Ross who by his great discovery has helped much to mitigate this plague.

May I conclude by quoting the lines I think too little known, which he wrote on the day when he discovered the malarial parasite in the body of the mosquito?

THE MOSQUITO.

This day relenting God
Has placed within my hand
A wondrous thing and God
Be praised at His command.
Seeking his secret deeds
With tears and toiling breath
I find thy cunning seed,
O millions murdering death!

I know this little thing
A myriad men will save;
O death, where is thy sting?
Thy victory, O grave?
Before Thy feet I fall,
Lord, Who made high my fate,
For in the mighty small
Is found Thy mighty great.

References.

(1) T. S. Hele: "Malaria in Macedonia; Chemical Investigations on the Excretion of Quinine by Soldiers in Macedonia," *Journal of the Royal Army Medical Corps*, April, 1922, page 251.

(2) P. Manson: "Tropical Diseases," 1908.

(3) A. G. Phear: "Notes on Blackwater Fever in Macedonia," *Journal of the Royal Army Medical Corps*, January, 1920, page 1.

(4) A. Castellani and A. J. Chalmers: "Manual of Tropical Medicine," third edition.

(5) Coplins: "Manual of Pathology," 1912.

(6) Kenneth McLay: "Malaria in Macedonia; Hæmatological Investigations on Malaria in Macedonia," *Journal of the Royal Army Medical Corps*, February, 1922, page 93.

(7) T. Storie Dixson: "The Treatment of Chronic Malaria," *The British Medical Journal*, June 30, 1923, page 1087.

Reports of Cases.

A CASE OF FAMILIAL CYSTIC KIDNEY.

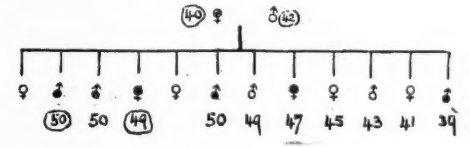
By JAMES SPRENT, M.C., M.B., Ch.B., L.M.,
Hobart.

CYSTIC disease of the kidney is so well known as to need no description; the family history, however, in this case is worth recording.

Miss M., aged forty-seven years, has had cystic disease of the right kidney for at least twelve years, when an enlarged kidney was found during an attack of influenza. Eight years ago she was thoroughly examined in Glasgow, by which time the disease was bilateral. There was definite hæmaturia six years ago and another attack three months ago. At present the right kidney is as large as a six months' pregnancy, the left is about the size of a cocoanut.

The family history is most interesting. Apart from the pathological interest they present a fine picture of the Imperial habit of the Scotch race, to which both of the parents belonged.

Born in the West Indies the family has scattered all over the Empire, but the latest information from Scotland, Canada, India and Australia is embodied in the accompanying genealogical tree.



♂ ♀ = alive and well.
♂ ♀ = affected by cystic kidney disease.
♂ ♀ = suffering from some form of kidney disease.
The numbers indicate the age, thus (40) = age at death, 40 = age of person still living.

I shall try and keep in touch with them and record later news, if any fresh cases develope.

A CASE OF SCURVY OCCURRING IN MELBOURNE.

By D. W. NEVILLE, M.B., B.S. (Melbourne),
Resident Medical Officer,
Melbourne Hospital.

THE occurrence of scurvy in an adult who has lived in the city for a number of years, is rather remarkable in these days when even those in poor circumstances can procure varied foods.

That scurvy is a dietary deficiency disease is borne out by the case recorded. The patient existed for a period of three years on bread, butter and cheese and jam. He was unable to afford the luxury of a fire and did not cook any food, nor did he have warm drinks. Thus his diet was extremely deficient in anti-scorbutic vitamin "C."

The notes of the case are as follow.

J.B., *ætatis* sixty-eight years, old-age pensioner, was admitted to the Melbourne Hospital on October 2, 1922, complaining of general weakness and inflamed, tender gums.

The past history and family history contain nothing of importance; up to the last year or two his health had been quite good.

The story of his present illness is closely connected with his mode of living during the past three years. With no proper attention and only a small pension to live on he had existed on the poorest of fare. Cooked meals were a luxury. He had no fire; apparently he had been content to live mainly on bread and cheese, with some butter and sometimes jam. Meat he rarely tasted. For about three years he had had neither vegetable nor fruit. Gradually he became weaker; he lost flesh and became pale and anæmic, his appetite failed. For some months he had had a sore mouth, the gums being swollen, tender and "burning," with frequent small bleedings, while his legs had felt weak and sore. He had not vomited nor had he noticed either hæmaturia or blood in the stools.

The two striking features on examination were the severe anæmia and the characteristic conditions of the gums. The mouth contained numerous badly decayed teeth fitting loosely in their sockets, surrounded by the swollen, spongy gums, which in places were almost purple and showed ulceration.

Subcutaneous hæmorrhages were confined to the left leg, at the back of the thigh and behind the knee, over the head of the fibula and upper end of the tibia and about the ankle. No underlying thickening could be felt; there was no deformity.

Nothing else abnormal was detected in a general examination.

A blood examination disclosed a fairly normal film; the red corpuscles numbered 2,200,000 per cubic millimetre; the hæmoglobin value was estimated at 30%.

A smear obtained from the gums revealed a great variety of bacilli and cocci including a Gram-positive diplococcus, several kinds of spirochætes and a short-celled branching fungus; no fusiform organisms were detected.

An X-ray examination of the gums showed advanced alveolar absorption. In the left leg there was slight periosteal reproduction in the posterior aspect of the upper third of the tibial shaft.

The treatment instituted was both local and general. The mouth was washed out frequently with a diluted Dakin's solution (one part in four) and the gums painted twice daily with a mixture of *liquor arsenicalis* and ipecacuanha wine in glycerine.

In recognition of the fact (recently emphasized by Dr. C. J. Martin) that scurvy is a disease due to deficiency of vitamin C., a first essential in general treatment was a diet rich in that factor. Four or five lemons a day were given in drinks, with the juice of an orange or two. A *purée* was made with raw cabbage leaves (minced), the mixture being rendered palatable by the addition of some canned tomatoes (which are also believed to contribute largely to the vitamin content). A light diet in increasing quantities was given. The anæmia was also treated by increasing doses of Fowler's solution starting with 0.18 mil after each meal.

Under this régime improvement was remarkably rapid. Within a few days the gums had shrunken almost to their normal proportions and had lost the deep vascularity which before had been so striking. The patient himself felt better and was obviously much brighter. With returning appetite he began to eat good meals and gradually increased in weight and strength. Now after three weeks he is feeling well and beginning to look well, his colour is returning and it should soon be posisble to clean up his mouth without fear of undue hæmorrhage.

I am indebted to Dr. R. H. Strong, the Honorary Physician, for permission to publish these notes.

Reviews.

THERAPEUTICS.

THE seventh edition of Sir William Whitla's "Dictionary of Treatment" has been carefully revised and brought up to date and the author is to be congratulated on the result.[1]

A review of the principal paragraphs shows that the latest work has been studied and appraised and its value is discussed. The chief interest of the book is, however, as in previous editions, the wealth of personal experience, especially on the therapeutic side, recounted by a recognized leader of medicine. At the same time it must be understood that we disapprove on principle of any book in the nature of a dictionary of treatment.

The book is of a handy size and, though not so ambitious as many more modern systems, reference to it rarely fails to give assistance in the treatment of difficult cases.

From such a book as this the average practitioner asks for definite instruction as to what treatment has been found to be useful in certain conditions and how it should be given. This information is wonderfully well supplied in this dictionary. When drugs are advised, the way in which they should be used, and the combinations most suitable are given and prescriptions are either given or suggested.

In a book covering so wide a field there are bound to be irregularities and some of the articles are rather disappointing, but on the whole it is surprising to find how complete and helpful is the information given.

Mr. S. T. Irwin has revised the surgical sections, while the gynæcological articles are contributed by Professor R. J. Johnstone.

[1] "A Dictionary of Treatment, Including Medical and Surgical Therapeutics," by Sir William Whitla, M.D., D.Sc., LL.D., M.P.; Seventh Edition; 1923. London: Bailliére, Tindall and Cox; Demy 8vo., pp. 1108. Price: 25s. net.

The Medical Journal of Australia

SATURDAY, JANUARY 19, 1924.

A Retrospect.

Therapeutics.

The first place in therapeutics for the year 1923 belongs to "Insulin." The gigantic proportions of the literature devoted to this preparation must be regarded as evidence of the importance attaching to it. Its method of production has been greatly improved and some success has attended the endeavour to render it relatively stable. Banting has found that "Insulin" remains active for at least six weeks; some of the samples imported into Australia seem to retain their activity for four months or longer. Quite recently a claim has been put forward by some French chemists that the substance can be prepared in the form of dry powder. In England and Canada the price has been reduced and in Australia a material reduction in price has been effected. Sufficient time has not yet elapsed to enable an opinion to be formed as to the value of "Insulin" in the treatment of persons suffering from diabetes. At present it is held that "Insulin" can only be of service in those forms of diabetes in which the amount of sugar in the blood is increased. The effect of a dose of several units of "Insulin," injected subcutaneously, is to lower the percentage of glucose in the blood for several hours. The effect passes off and the condition of the patient is apparently little altered. The substance is employed with care, as too large doses cause severe dyspnœa, convulsions, coma and death. These ill-effects can be counteracted, at least soon after their appearance, by the exhibition of glucose, unless the patient be vomiting, when glucose or adrenalin must be injected subcutaneously. For persons suffering from hyperglycæmia "Insulin" has been utilized in two ways. In the first mode of treatment the patient is permitted to take freely of carbo-hydrate foods and the injections are made when the glucose content of the blood is 0.2% or higher. Under these circumstances the concentration of the sugar in the blood is lessened for some hours. By a judicious distribution of the daily dose of "Insulin" the amount of glucose in the blood is kept at a much lower level than without it. The excretion of sugar in the urine is diminished and the daily loss of sugar may be practically abolished. The second method of employing this preparation is to limit the patient's diet in quantity and kind to such an extent that the glucose content of the blood falls to 0.15% or less. Glucose is then no longer excreted in the urine. The diet is then increased in quantity and injections of "Insulin" are given. Under these conditions hyperglycæmia may be prevented from developing. The patients ingest a larger number of grammes of carbo-hydrates than they would have been able to consume in the absence of the injections. The majority of physicians still employ dietetic means for controlling the glucose content of the blood. The claim has been made that after treatment with "Insulin" for weeks or months the kidney no longer excretes sugar and the patient may ingest a sufficient supply of food without careful regulation of the quantity of sugars and starches. The future will reveal whether this is the case.

The starvation treatment of Allen is losing ground, while the diet of Newburgh and Marsh of of high fat and low carbo-hydrate and protein is gaining in popularity.

Arthritis deformans has been treated with *Bacillus coli communis* vaccine, given intravenously, and some good results have been claimed. Since the ætiology of the condition had not yet been definitely established, much importance cannot be placed on these reports. Similarly the work of Rosenow and others on focal infection as a causal process in this disease has failed to convince the majority of careful observers.

For so-called intestinal toxæmia, the American physicians are using preparations of *Bacillus acidophilus*. It has been shown that the growth of these organisms from tablet preparations is incomparably less vigorous than that of fresh bacteria.

Colloidal preparations continue to be used in the treatment of many affections. These preparations are given by intravenous injection. Studies carried out in England of some of the proprietary colloidal

preparations have revealed that the metal or other drug content at times is extremely minute.

Bismuth is being used in syphilis. "Trépol" seems to be the most popular of the newer bismuth preparations. A considerable amount of work has been done in connexion with this subject and several new bismuth compounds have been prepared. Some of these would seem to be of value in therapeutics.

Almroth Wright has contributed some interesting data in regard to a new method of ascertaining the pathogenesis of bacteria and the resisting power of the blood. This work has considerable bearing on vaccine therapy.

Gynæcology.

As will be seen in the next chapter of this summary, a great deal of attention is being directed toward the chemical and biological aspects of gynæcology and obstetrics. While physiological study has been employed with great frequency and freedom to problems concerning pregnancy and labour, there is a distinct tendency to investigate the bio-physical and bio-chemical processes involved in those surgical conditions that affect women.

Bovée has endeavoured to prove the incorrectness of Formad's dictum that all hæmatoceles of the Fallopian tubes are ectopic pregnancies. He classifies hæmatoceles in non-pregnant women as menstrual and non-menstrual and holds that the majority of the non-pregnant women with hæmatoceles recover without operation. The differentiation between the two conditions can be made only by microscopical examination as a rule.

Adeno-myomata of the Fallopian tubes have been studied by Mahle. The same author has contributed an exhaustive work on the adeno-carcinomata of the body of the uterus. He divides these growths into four groups on the basis of their macroscopical and microscopical appearances which he associates with varying degrees of malignancy.

At the Congress considerable discussion took place in connexion with the prospects of radiotherapy for uterine tumours. The gynæcologists appear to rely on surgical measures as tenaciously as heretofore, while the radiologists claim favourable results in both benign and malignant tumours by a combination of X-rays, radium and in certain circumstances surgical interference. They complain that nearly all the patients referred to them for cancer of the uterus are in an advanced stage of the disease, when surgical means offer no hope of cure. The proper place of deep X-ray therapy in cancer of the womb will be defined within the next few years.

Maguire made an important contribution to the subject of *procidentia uteri* by displaying and describing in detail an exceptionally fine dissection of the pelvic organs of woman with complete prolapse. The relations of the ureter to the prolapsed uterus were clearly demonstrated.

The value of the completment fixation test in the diagnosis of gonorrhœa in women has not yet been universally recognized, but this diagnostic measure is gaining an increasing number of adherents.

Obstetrics.

The most important work of the year in the realm of obstetrics is concerned with the investigation of the chemical changes in the body fluids during pregnancy and lactation. De Wesselow has shown that the calcium and inorganic phosphorus content of the maternal blood undergoes considerable variation during pregnancy and lactation. The growing fœtus and infant make a great demand on the mother for these elements. In consequence there is a tendency toward a lowering of the calcium and phosphorus content of the blood during pregnancy. The supply of calcium to the fœtus seems to be met by a raid on the mother's calcium reserves in her osseous system. After delivery the mother's calcium balance is rapidly restored.

Rowley, working at the Mayo Clinic, has conducted some important researches on the sugar content of the blood during pregnancy. He has demonstrated that the concentration of sugar in the blood of pregnant women near term is about the same as that of non-pregnant women, but in the fœtus the concentration is lower. After delivery there is a temporary rise in the sugar content of the mother's blood. It would appear that the placental interchange of glucose is dependent on the higher concentration of sugar in the blood of the mother than in the blood of the fœtus.

Some interesting work has been carried out in connexion with the chemistry of the blood and tissue fluids of a woman suffering from a severe

gestational affection terminating in acute yellow atrophy of the liver. During the early stages of the illness there was considerable retention of all the nitrogenous products, the urea, uric acid and creatinin. On the ninth day the creatinin content had diminished. Leucin and tyrosin were found in the urine on the sixth day. Recovery appears to have been heralded by the appearance of a diminution of the retained creatinin.

Windeyer has investigated the fate of women suffering from eclampsia and similar conditions frequently spoken of as toxæmia of pregnancy. At the Royal Hospital for Women, Sydney, in a series of one hundred and fifty-eight women with definite eclampsia there was a mortality of only 6.96%. Ante-natal treatment had a considerable effect in preventing the development of eclampsia.

Wilson and Bourne have examined the basal metabolic rate in pregnancy as a measure of the functional activity of the glands of internal secretion. They found that the basal metabolic rate was higher in the majority of pregnant women than in non-pregnant women. Usually the increased rate disappears soon after delivery, but in some women it persists and is associated with an excessive thyreoid gland activity. Some of these women suffer from severe menorrhagia without signs referable to disorder of the pelvic organs. The ordinary methods of treatment exercise little beneficial action, but these patients respond well to radio-therapy of the thyreoid gland. The result of this treatment is the reduction of the basal metabolic rate to normal limits. Vincent has collected the available evidence concerning the disorders of the ductless glands and has published an exhaustive review of the work done on the interrelation of the several organs of internal secretion in pregnant and non-pregnant women.

Orthopædic Surgery.

The most prominent piece of work on orthopædic surgery published during the year was that dealing with the operation devised by Lorenz for dealing with long standing dislocations and certain other abnormalities of the hip joint. Lorenz has sought to make use of the support which is usually afforded by the capsule of the joint and by the hip muscles and in addition he has obtained an actual bony support from the region of the acetabulum. This is accomplished by performing a long oblique osteotomy just below the neck of the femur and by carrying the shaft of the femur inwards towards the acetabulum and the placing of the whole limb in the position of abduction. Congenital dislocation of the hip has been the subject of an investigation. Little that is new in regard to methods of treatment, has been introduced, although a modification of Denucé's method appears to be worthy of consideration.

Schwartz has advocated the application of plaster of Paris supports in the treatment of Pott's disease of the spine. In an interesting study he has shown the defects attaching to the divided apparatus. He has introduced a method by which the kyphosis may be adequately corrected.

Synovectomy has yielded excellent results in chronic infective arthritis in the hands of Sweet. He claims that this operation restores function and indirectly provides the necessary metabolic stimulus for repair in diseased joints.

Halluæ valgus is a disease for which many operations have been devised and recommended. The greater number of these operations have for their object the correction of some abnormality in the metatarsal bone, but David Silver claims that his method of dealing with the soft tissues of the joint removes the greatest obstacle to the reduction of the deformity.

The treatment of instability of the foot continues to attract the attention of orthopædic surgeons. Steindler has described an operation to rectify the lateral displacements that occur in flail feet. In addition to attacking the bones of the tarsus, he obliterates the ankle joint. He contents that this is necessary, because of the lateral movements that occur at the ankle joint. While Steindler's view has not been universally accepted, it is undoubtedly applicable in certain instances.

Putti, MacCausland and others have made valuable contributions to the subject of the importance of arthroplasty as a means of treatment. It has been shown that many patients suffering from ankylosis of joints have been relieved by arthroplasty. The consensus of opinion, however, is that this operation is an unwise procedure in ankylosis

of the hip joint and in the majority of cases of ankylosis of the knee joint.

Hygiene.

Hygiene, the science of healthy living, is making vast strides and hygienists are busily occupied in applying scientific principles to the prevention of disease and to the maintenance of health in social life and in the industries. Early in the year the Medical Research Council published a highly important report by Dudley on the epidemiological conditions obtaining at the Royal Naval College with special reference to diphtheria and scarlet fever. The commonest methods of spread of infection were closely studied and the fluctuations in immunity were estimated by means of the Schick test. Dudley endeavoured to work out the velocity of infection and demonstrated the existence of what he has termed epidemic immunity.

At the Australasian Medical Congress (British Medical Association) Burnell and Barlow reported the results of their observations on five thousand school children. Among this population they found that approximately 1% were carriers of diphtheria bacilli. Moore discovered that 9.69% of school children and teachers at Bendigo were carriers. The majority of the carriers harboured virulent bacilli. By using the toxin-antitoxin method he succeeded in reducing the number of susceptible children as gauged by the Schick test from 45.9% to 17%. Since these children have been immunized, no diphtheria has occurred among them.

The full debate on tuberculosis at the Congress revealed some important, albeit somewhat disjointed, information. From the resolution passed without dissent it may be gathered that this information is regarded as insufficient for the purpose of instituting preventive measures.

Valuable papers were read and opinions expressed in discussion at the Pan-Pacific Science Congress in connexion with the prophylaxis of pneumonoconiosis and pulmonary tuberculosis among miners. At the same meeting the question of climate and human efficiency received attention, but no new facts were elicited and no satisfactory measurement has been accepted as an index of comfort and safety of persons engaged in manual pursuits.

Attempts have been made by Hunt, Pembrey, Brittingham, White and many others to find a convenient measure of human efficiency. The suggestion to utilize the pulse ratio, or the ratio between the pulse rate at rest and after exercise, is not altogether acceptable. In close connexion with this subject that of the control of effort in factories has engaged the attention of hygienists all over the world. The League of the Red Cross Societies and the various institutions in all countries aiming at the improvement of the health of the worker have collected information of value in this direction. Vernon has carried out some admirable work in studying the atmospheric conditions of factories of various kinds and in demonstrating that by increasing the air movement and improving the atmospheric conditions otherwise unsatisfactory callings can be rendered safe and comfortable and the efficiency of the workers raised.

Bishop Harman has investigated the occurrence of myopia in persons engaged in work demanding close and continuous vision. He has concluded that the risks of myopia are heaviest when the persons are engaged in this kind of work. He advocates the exclusion of persons with mild grades of myopia for work requiring close visual attention.

Physiology.

A great deal of work in physiology during the past year has been in relation to the effects of extracts of the insular cells of the pancreas and particularly the extract known as "Insulin." The early preparations were somewhat irritating and were very unstable. Considerable progress has been made in the methods of preparation. "Insulin" is now made in a form that is non-irritating and relatively stable. It is also more concentrated than the early preparations.

The chemical nature of the active principle of the insular cells is still a matter of doubt. Its method of action is also a matter of doubt. When "Insulin" is injected into either a normal or a diabetic animal, it produces a fall in the concentration of sugar in the blood. Whether the mechanism is the same in both kinds of animals is not known. Macleod and Banting have shown that the administration of "Insulin" with glucose to depancreatized

dogs leads to the storage of considerable amounts of glycogen in the liver and that the respiratory quotient becomes raised in the same manner as it becomes raised in normal animals to whom carbohydrate alone is given. McCormack and O'Brien have shown that "Insulin" prevents the deposition of glycogen in normal animals when given together with carbo-hydrate after preliminary starvation; Dale and Dudley have found that it reduces the stores of glycogen when given to well-fed animals. Eadie, Macleod and Noble have demonstrated that the addition of "Insulin" to blood does not increase the rate of glycolysis. Winter and Smith have endeavoured to show that "Insulin" converts α and β glucose into γ glucose; their experimental technique is held to be open to criticism. Hepburn and Lachford found that the addition of "Insulin" to Locke's solution in perfusing a heart caused the heart to consume more glucose without there being any increase in the glycogen content of the heart. Dudley, Laidlaw, Trevan and Boock conclude from experiments on mice that "Insulin" does not lower the blood sugar concentration by increasing the rate of combustion of glucose. Dixon, Eadie and Pember have shown that "Insulin" causes very little change in the respiratory quotient of dogs and rabbits, so that a sudden call for sugar on the part of the tissue cells cannot be attributed to its increased oxidative breakdown. It will thus be seen that many important questions relating to the metabolism of carbo-hydrates in the body have been raised.

Hill and his collaborators have continued their studies of the mechanism of muscular work and have extended them to observations upon man. Hill, Long and Lupton have shown that in man during strenuous muscular exercise a considerable amount of lactic acid is produced and that in the recovery period about four-fifths of the lactic acid is removed from the blood and is probably re-synthesized to glycogen, while the remaining fifth is oxidized to carbon dioxide and water. A similar state of affairs has previously been established in connexion with the muscle of the frog. Hill and Lupton have introduced a new conception of "oxygen debt," that is the increased consumption of oxygen over the resting value. This increased consumption is used in the oxidative recovery process. It lasts for about eight minutes. The intensity of muscular effort and the length of time during which a muscular effort of a given intensity can be continued depend on two factors—the maximum amount of oxygen that can be taken up from the lung during the time and the maximum oxygen debt. A sharp burst of exercise depends for its success upon the efficiency of the buffers which take up the lactic acid; a long continued effort depends on the efficiency of oxidation and the supply of oxygen.

Langley has shown that stimulation of the posterior root of the seventh lumbar nerve in the cat causes flushing of the skin of the digital region of the hind foot and that the antidromic vaso-dilatory fibres run in the superficial branches of the plantar nerves. The small branches of the digital nerves are not perceptibly affected by antidromic impulses. The experimental evidence signifies that the antidromic nerve impulses cause dilatation of the capillaries. The digital arteries, although very muscular, do not dilate, so that it may be inferred that there is no direct antidromic action on the unstriped muscle of any artery.

Mellanby and Higgett claim that adrenalin produces apnœa by causing constriction of the blood vessels supplying the respiratory centre. As no sympathetic nerves have been found supplying these blood vessels, they consider that adrenalin probably constricts the vessels independently of any sympathetic innervation. Roberts has shown that extract of pituitary, "Ergo-toxin" and barium chloride as well as adrenalin cause a diminution or complete stoppage of respiration. Since this effect occurs when the blood pressure is prevented from rising, it must be referred to anæmia of the respiratory centre induced by cerebral vaso-constriction.

The Hartmans assert that they have demonstrated that adrenalin is produced by the supra-renal cortex. If this be confirmed, it will seriously affect the interpretation of the results of many experiments in which one supra-renal gland has been removed and the medulla of the other destroyed, while the cortex has been left intact.

Abstracts from Current Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

Protection Against Typhoid-like Infections by Inoculation.

HENRY J. NICHOLS AND CLARENCE O. STIMMEL (*Journal of Experimental Medicine*, September, 1923) record conclusions drawn from results obtained by experimental vaccination of guinea pigs. Advantage was taken of a spontaneous and severe epidemic of infection due to *Bacillus œrtrycke* in guinea pigs to study the picture of the natural disease in these animals and the protection afforded by vaccination against the typhoid group of infections. It was found that complete protection was secured by vaccination with doses of 500, 1,000 and 1,000 million bacilli administered subcutaneously at eight day intervals. The control animals all died of the acute disease and the causal organism was recovered from spleen, liver, gall bladder or heart's blood. No protected animal became infected. The protection of the animals varied with the number of organisms injected, doses less than those mentioned were unsatisfactory. Repeated doses were found to be more effective than a single dose and a freshly prepared vaccine afforded better protection than an older one. The period of maximum efficiency was found to be about the first eight months. Vaccines prepared with saline solution were found more effective than lipo-vaccines, sensitized vaccines or supernatant fluid vaccines.

The Diagnosis of Small-Pox by the Paul Method.

JOSEPH M. SCOTT AND CHARLES E. SIMON (*American Journal of Hygiene*, July, 1923) detail observations made on the use of Paul's method of diagnosis of small-pox in an epidemic occurring in Baltimore. The technique adopted was as follows: During the vesicular or pustular stage of the disease the contents of a vesicle or pustule were expressed and collected with aseptic precautions. Both eyes of a selected rabbit were cocainized and the corneæ delicately scarified. One cornea served as a control and to the other an emulsion of the material collected from the vesicle or pustule was applied. At the end of forty-eight hours the infected cornea appeared to be covered with tiny air bubbles or blebs, while the conjunctiva was free from any signs of irritation. The animal was killed, the eye-balls enucleated and placed in a bath of sublimate alcohol consisting of two volumes of a saturated solution of mercuric chloride and one volume of 96% alcohol. After two to four minutes the eye-balls were removed to a 70% solution of alcohol. The control eye presented an even opaqueness with the exception of faint lines representing the scarification. The variola-infected cornea presented a milky white background with here and there in the scarified area intensely white and opaque little elevations with a central crater. The authors regard this picture as pathognomonic of variola infection. It is never seen after inoculation with varicella material and is quite different from the picture presented by a purulent process. Where there is any doubt the cornea should be sectioned and examined microscopically. In sagittal sections the protuberances already noted of the naked eye are seen to consist of epithelial hummocks the result of an increase in the size of the epithelial cells due to imbibition of fluid. The basal cells are first invaded and as they increase in size they are thrown out of their normal position in relation to one another and to the cells overlying them. Desquamation follows and leads to the production of the crater-like centres of the elevations. The pressure on the cells leads to invagination of one cell within another and cells so altered are known as "box-cells" (*Schachtelzellen*). Eighteen rabbits were inoculated with material from patients with variola. The macroscopical changes in the cornea were present in seventeen instances and doubtful in one, while the microscopical changes were present in all. Fourteen rabbits were inoculated with vaccine virus and the macroscopical and microscopical changes in the corneæ were present in all. Thirty-six scarified uninoculated corneæ (normal controls) failed to manifest any change.

The Vaccine Treatment of Asthma.

FRANCIS M. RACKEMANN AND LILIAN B. GRAHAM (*Journal of Immunology*, July, 1923) discuss the results of the treatment of asthma with stock and autogenous vaccines. Several autogenous vaccines were prepared for each patient with the organisms recovered on culture from his sputum. The patient was inoculated subcutaneously with small equal doses of each. The local reactions occurring in twenty-four hours were carefully observed and the vaccine which produced redness and swelling, was used for further treatment. Doses of selected vaccines were administered at intervals of five to seven days, the size of the dose being determined entirely according to the amount of local reaction produced in the patient's arm by the preceding dose. The writers state that successful results were only achieved by the use of vaccines which produced a red, swollen area of at least 3.75 centimetres in diameter in the patient's arm. When a predominating organism was present in the patient's sputum, a good result was achieved in every instance in which the vaccine produced such a reaction; if the predominating organism failed to produce a local reaction no improvement took place. A predominating organism was recovered and used in twenty-nine instances. Good results followed in eleven and moderate results in eleven. In sixty-one instances no predominating organism was recovered, but a selection from several autogenous vaccines was made on the basis of the local reactions following the test dose. Good results occurred in thirteen instances and moderate results in fourteen. In the case of stock vaccines the general procedure was similar to that employed in treatment with autogenous vaccines. Four or more stock vaccines were selected, including a *Staphylococcus aureus*, hæmolytic and non-hæmolytic streptococci, pneumococci or *Micrococcus catarrhalis*. The vaccine which produced a definite local reaction, was selected for further use. In twenty-nine patients so treated improvement was achieved in all but one. In twelve instances stock vaccines which failed to produce a local reaction, were used and no improvement followed. The authors infer that because the local reaction is such an important feature in the selection of the vaccine used and because the results with stock vaccines are as good or better than those achieved with autogenous vaccines, the action of all vaccines in asthma is non-specific and probably of the nature of "protein shock."

Appendicitis and Oxyuris Vermicularis.

E. H. EASTWOOD (*The Journal of Pathology and Bacteriology*, January, 1923), having examined one hundred and twenty-three appendices, concludes that *Oxyuris vermicularis* occurs in the appendix in about the same proportion in normal persons and in those suffering from appendicitis. He failed to find any evidence in support of the theory that *Oxyuris vermicularis* is frequently a cause of appendicitis. Seventy-three of the appendices examined showed evidence of acute or chronic inflammatory changes, while fifty controls were obtained from the *post mortem* room. Oxyuris was found in fourteen of the seventy-three appendices which showed inflammatory changes. Of the fifty normal appendices, oxyuris was found in fourteen. The average age of the patients with appendicitis was 25.3 years, of those with normal appendices 24.7. In both series the worms were found to preponderate in the earlier years of life. In the appendices of controls under two years of age, oxyuris was found in four out of seven instances. The youngest was eight months. Oxyuris was recovered from two out of twenty-one gangrenous appendices, from two out of nine acutely inflamed and suppurative appendices and from ten out of forty-three in which the inflammatory process was sub-acute or quiescent. The presence of oxyuris was not associated with a local eosinophilia.

Undulant Fever.

T. ZAMMIT (*Annals of Tropical Medicine and Parasitology*, March, 1922) urges the necessity for adequate in-

spection of the goats in Malta with a view to eradicating undulant fever from amongst the civil population. When in 1905 it was demonstrated that infection was caused by drinking fresh goats' milk, the naval and military authorities at Malta prohibited the use of fresh milk in the services. Since that date cases of undulant fever have been practically unknown in the army and navy, whereas before that date the incidence in the British Mediterranean Squadron averaged 28.5‰ and in the British garrison 25.6‰. Unfortunately it has not been found possible to impress the Maltese population with the need for boiling milk or abstaining from its use. The sanitary authorities have introduced periodical inspection of goats, with destruction of all infected animals, as another means of protecting the civil population. Samples of blood from the goats are examined for the presence of specific agglutinins or samples of milk are submitted to Zammit's test. The latter is performed by mixing milk diluted with emulsion of *Micrococcus melitensis* in strengths of one in twenty or one in forty. A positive result is indicated by a precipitate visible to the naked eye in two hours. Prophylactic inoculation of goats with vaccine of *Micrococcus melitensis* has so far proved unsuccessful.

HYGIENE.

Mortality of Coal and Metalliferous Miners in England and Wales.

EDGAR L. COLLINS (*Proceedings of Royal Society of Medicine*, September, 1923) describes the mining community as a compact body of workers who for the most part do not change their occupation. Their work, whether getting coal or mineral ores, is carried out underground in excavated workings dimly illuminated and artificially ventilated. Considerable physical exertion is called for and there is exposure to dust of the materials worked. They are away from their homes for eight or nine hours a day and carry with them any food or drink they consume during working hours. Notwithstanding these similarities in their working life, the mortality experienced by different groups of miners is found to differ widely. Considerable difference also exists in morbidity, especially with regard to certain special occupational diseases. Thus nystagmus, when related to conditions of work, is confined to coal miners and has been found to exhibit a definite relation to dimness of illumination. Again, subcutaneous cellulitis of the knee, elbow and hand is seldom seen except among coal miners. On the other hand, tuberculous silicosis is so prevalent among certain metalliferous miners that knowledge of the disease depends to no small extent on studies carried out on tin and gold miners. The author points out that in coal mining since 1873, the population employed and the output have been rising, yet a larger number is now required to give the same output. He holds that his figures go to prove that as the coal miner has worked less strenuously, his tendency to die or be killed during the working period of his life has diminished. The same holds for metalliferous workers and here again a tendency for the accident and general mortality rate to move together is seen. The author points out in regard to accidents, however, that it is not enough for the natural protective mechanism against accidents to be in good order and the possessor of the mechanism must also be instructed how to act—the "safety first" movement is required. Among coal miners the causes of an excessive mortality are pneumonia, bronchitis and accidents, while the causes of an unusually low mortality are phthisis and diseases due to alcoholism. Variations in the mortality, especially in respiratory diseases, are in the author's opinion due to geographical and climatological influence. In regard to alcoholism it is pointed out that the coal miner is a "convivial drinker," not an "industrial drinker," for once he goes below no alcohol can be obtained. Records tend to show that industrial drinking before and during work, is far more harmful than convivial drinking. The author offers a suggestion that provision of drinking water underground might have considerable effect in lessening convivial drinking among coal miners. Evidence goes to show that the coal miner does not experience a high incidence of cancer of the skin, while the incidence in metalliferous miners is definitely on the low side. In regard to metalliferous miners (tin, lead, ironstone mining) the mortality excess is due to the same cause, *id est* phthisis with respiratory diseases and to a lesser extent Bright's disease. The influence at work is proved to be exposure to silica dust.

Tetrachlorethane Poisoning.

D. C. PARMENTER (*The Journal of Industrial Hygiene*, September, 1923) points out that symptoms at the very early stages of tetrachlorethane poisoning can be detected by careful observation. The early stages may be accompanied by and are often preceded by a particular blood picture. Proper interpretation of this picture makes possible the prevention of all but the very slight forms of poisoning. In almost all instances the increase in large mononuclear cells keeps exact pace with the appearances of increase in symptoms. The increase in broken and immature large mononuclear cells also follows practically the same course. Sudden heavy doses of fumes often produce symptoms far in advance of the blood changes, but the blood picture reaches the same degree of severity although sometimes not until a day later. In other words, the symptomatology curve and the blood curve arrive at about the same peak of severity, but at slightly different times. The important items of the differential count are the percentages of polymorpho-nuclear leucocytes, of large mononuclear cells and of broken cells. A high mononuclear cell count of 20% or over usually indicates poisoning, while a large number of broken cells (generally mononuclear cells) seems to indicate rapid progression of poisoning. Thus, a patient with mild symptoms, nervousness, lack of sleep, distaste for food and a slight nausea with general malaise was submitted in February to a blood examination. The differential leucocyte count revealed the polymorpho-nuclear cells to be 32%, large mononuclear cells 47% and broken cells 15%. In April with definite signs of poisoning including vomiting, the picture was polymorpho-nuclear cells 21%, large mononuclear cells 53% and broken cells 18%. The author holds that this goes to show that the blood picture and the symptoms which in the early stages are almost wholly gastric and general, follow nearly parallel lines.

Mercantile Industrial Work.

C. PARMENTER (*The Journal of Industrial Hygiene*, July, 1923) states that mercantile health as he has seen it is concerned almost entirely with an artificially created community. This community must be kept well and, if possible, at work for eight hours each day. He points out that in the work in which he engaged, the accidents were few on account of the absence of machinery. In a store with 850 employees 8,500 visits were paid to the health department, each employee came ten times. The visits averaged thirty a day. Of the total patients he as medical officer saw eight hundred or about 10%. He calculates that the cost of this service—a part time physician, a full time nurse and a visiting nurse—was four dollars per employee per year. This is exclusive of the cost of the original installation of lighting and heating and renting charges for space used by what might be styled a non-productive department. Again, if a system of thorough medical examination of all applicants for employment were instituted this cost would rise because the medical officer would have to give more time to the work. These conclusions were borne out by similar experience in two other stores, the figures practically corresponding. The relationship between the medical officer of the store and the general practitioner is an important part of the problem. Patients suffering from serious illnesses or those requiring prolonged treatment were referred to the general practitioner. In conclusion he states that such items as the reduction of insurance premia, the reduction of loafing, the introduction of better care and control and sometimes the reduction of absence through sickness, have in certain instances proved definitely that the medical department more than pays for itself.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in the Lister Hall, Hindmarsh Square Adelaide, on October 25, 1923, DR. STEELE SCOTT, the VICE-PRESIDENT, in the chair.

Loose Body in the Knee Joint.

DR. H. CAREW NOTT exhibited a series of skiagrams of a movable loose body in the right knee joint. A female patient complained of weakness and occasional locking of the joint. The radiographic examination revealed an oval-shaped opacity lying between the femoral condyles in the vicinity of the crucial ligaments. At operation a small pedunculated tag of cartilage was removed from this situation and though the joint was searched, no other body was found. The joint was subsequently re-examined by X-rays and the loose body then found to be located high up in the supra-patellar pouch; from this situation it was removed at a second operation.

Hydatid of the Lung.

Dr. Nott also showed skiagrams of the thorax of a young man with a complete hydro-pneumothorax on the right side into which a dense circular opacity projected from the mediastinum. The diagnosis of hydatid cyst was subsequently confirmed at operation; the air in the right cavity of the thorax was under positive pressure and the right lung was completely collapsed.

Rodent Ulcer.

DR. H. F. SHORNEY showed three patients with rodent ulcer affecting the eyelids on whom operations had been performed. In one exenteration of the orbit had been carried out, in the second two-thirds of the lower lid had been removed and a plastic operation performed by sliding in a skin flap from the temporo-malar region. The disease had recurred in the third patient after several operations and had involved the conjunctiva of the globe. It was hoped that this recurrent growth would yield to radium.

Syphilitic Meningitis.

DR. F. S. HONE showed a man, a ship's fireman, who had suffered from headache and occasional vomiting for three weeks before his arrival in Adelaide. The vomiting had been uninfluenced by food. He had been stupid and heavy during that time. There had been no pyrexia. On arrival at Port Adelaide he had been sent into hospital; the diagnosis had appeared to lie between encephalitis and cerebral tumour. Examination had revealed that diplopia only appeared when the patient looked downwards for a range of about 15° on either side of the mid-line. There had been no diplopia in any other position of the eyes and no other evidence of involvement of the third nerve. There had been deafness on the left side and hearing had not been very acute on the right side. No facial paresis had been present, but definite weakness of the left arm and leg, with somewhat lessened deep reflexes in the arm and leg and a weaker abdominal reflex on the left side. There had been swelling of optic discs with blurred margins.

A history of a chancre five months previously had been obtained. The patient had been treated with two injections of "Salvarsan."

Lumbar puncture had yielded cerebro-spinal fluid under increased pressure. The fluid had contained an increased number of lymphocytes; a globulin reaction had been obtained and a reaction to the Wassermann test. The blood had not yielded a reaction to the Wassermann test.

The patient was shown to illustrate early syphilitic basal meningitis. The condition had been recognized within twelve months of the primary sore, but this was not frequent. The combination of involvement of the fourth with the eighth cervical nerve, while the third nerve escaped, was unusual. The early disappearance of the power of the blood to react to the Wassermann test was also interesting, while it persisted in the cerebro-spinal fluid.

The patient's condition had improved during his stay in the hospital under treatment with further arsenical injections. His headache and the weakness in his limbs had disappeared; his mental condition had become more active, although the deafness and diplopia with limited range had persisted.

Aortic Aneurysm.

Dr. Hone's second patient was a man, aged fifty-six years. His condition afforded an unusual opportunity of comparing the findings in a patient who four years previously had an affection diagnosed as aortic aneurysm. Four years previously he had attended at the Out-Patients' Department after having been treated for bronchitis for twelve months. The brassy nature of his cough and the huskiness of his voice had led to examination of his larynx and an abductor paralysis had been detected on the left side. A skiagram had revealed a widening of the arch of the aorta. No other signs of aneurysm had been detected. He gave a history of a chancre thirty years previously, but his blood had not reacted to the Wassermann test. He had been kept at rest for some time and then had been discharged with instructions to do only the lightest work. He had carried out these instructions for a time and had then worked as a fireman to two stationary engines and had lived an ordinary workman's life. He had recently been admitted to the wards after influenza with headache and nasal symptoms. Physical examination of larynx and radiographical examination of the chest showed practically no change in the condition after four years.

Sarcoma of the Skull.

DR. STANLEY VERCO showed a boy, aged nine years, who had had his right arm amputated at the shoulder on March 6, 1923, on account of a new growth involving the lower end of the humerus. The tumour had had the appearance of a sarcoma. This had been confirmed by microscopical examination. During April the chest had been exposed to therapeutic doses of X-rays with a view to minimize the liability to metastases in the lung. On September 8, 1923, he had been seized with severe pain in both temporal regions, followed by vomiting and headache. The vomiting had continued. After a severe bout of headache on September 17, he had lost power in his arm for five minutes. He had little appetite and his weight had decreased.

On examination a hard tumour had been seen projecting from each parietal region, about half the size of a hen's egg, and a smaller, elastic tumour in the occipital region. The right knee jerk had been elicited with difficulty. Otherwise no abnormality had been revealed on examination. The headache and vomiting had continued while the patient had remained under observation.

On September 25, two-thirds of the necessary dose of high voltage X-radiation had been administered, while the remaining third had been given on September 27. Three days later the vomiting had ceased and the tumours had decreased in size. On October 13, 1923, the tumours had disappeared entirely and there had been no recurrence of symptoms. On October 24, 1923, the patient's general condition was much improved and his appetite good. There had been no headache and no vomiting. Dr. Verco expressed his indebtedness to Dr. H. S. Newland for permission to exhibit the patient who was under his care at the Children's Hospital.

Polycystic Disease of the Kidneys.

PROFESSOR J. B. CLELAND described a series of polycystic kidneys obtained at *post mortem* examinations. This condition was considered to be rare. It had not been encountered in the course of five hundred *post mortem* examinations at the Adelaide Hospital during 1920, 1921 and 1922. At one hundred and seventy *post mortem* examinations

during 1923 no less than five examples had been encountered; in three instances there was an accompanying cystic condition in the liver. Of the five specimens one was open to some doubt as the kidneys were only slightly enlarged, although they presented a typical polycystic appearance. The ages of the patients ranged from forty-two to sixty-seven years. Four were males and one was a woman. One patient died from malignant endocarditis, another from broncho-pneumonia and vegetations on atheromatous ulcers in the aorta, and a third from pyæmia. The fourth patient died from symptoms apparently unconnected with the renal condition. The fifth patient had a calculus in the pelvis of one of the kidneys which had led to anuria. An operation had been performed, but the patient had died. It would thus appear that in none of the five was death due simply to the polycystic condition. In three and probably in four it would seem as though the lesions in the kidneys had given rise to no symptoms at all.

The ætiology of the condition was obscure. A congenital origin had been suggested, but it was difficult to explain on developmental grounds the occurrence of lesions in both liver and kidneys in so many individuals. These two organs were quite unrelated to each other and Professor Cleland could offer no explanation why a developmental error occurring in one should so frequently be associated with a similar error in the other. It had been suggested that the condition might be due to the presence of some virus which located itself in the epithelial cells and was capable of causing these cells to form cystic spaces. If a virus could settle in the kidney and also in the liver they would have an explanation of the involvement of both these organs. In the case of coccidiosis of the liver of the rabbit a large protozoal parasite was capable of stimulating epithelial cells and of giving rise to a cystic development. It was not inconceivable that some filtrable virus might be able to produce a somewhat similar result. Professor Cleland gave the following information concerning the five specimens exhibited.

The first specimen was the kidney of a male, aged fifty-six years, who had been admitted under Dr. de Crespigny on April 12, 1923. He had died on April 24, 1923. The blood pressure had not been increased. The specific gravity of the urine had been 1010 and the urine had contained a slight trace of albumin. The patient had complained of malaise, weakness and loss of weight. He had gradually become weaker; vomiting had occurred; collapse had set in and had been followed by unconsciousnes sand typical air hunger. At the autopsy the kidneys had been found to be very large and polycystic, the left weighing six hundred and twenty-three grammes and the right eight hundred and fifty-eight grammes. Small cysts of varying size were scattered throughout the liver. No other lesions of consequence had been detected.

The second kidney was that of a male, aged sixty-seven years, who had been admitted under Dr. Ray on June 4, 1923, and had died on June 9. The specific gravity of the urine had been 1020; the urine had been alkaline and had contained much albumin. He had manifested no symptoms referable to the kidney condition. At the autopsy malignant endocarditis affecting the aortic valve and adjacent parts had been found. *Streptococcus faecalis* had been grown from the vegetations. Incidentally it had been found that the left kidney which weighed three hundred and sixty-eight grammes, contained a number of polycystic cavities up to 1.2 centimetres in diameter in its lower end. The right kidney, which weighed two hundred and sixty grammes, was also involved in a polycystic condition chiefly in its lower end; there was a large simple cyst in its upper part. No cysts were detected in the liver.

The third specimen had been obtained from the body of a male, aged sixty-four years, who had been admitted under Dr. Ray on June 14, 1923, and had died on June 22, 1923. The patient had had the signs and symptoms of broncho-pneumonia from which he died. The urine had been acid and had contained some hyaline casts. Its specific gravity had been 1030. The systolic blood pressure had been one hundred and twenty millimetres and the diastolic ninety millimetres of mercury. At the autopsy, in addition to broncho-pneumonia, vegetations on atheromatous ulcers in the aorta and an infarct near the apex of the left ventricle had been discovered. Both kidneys had been moderately enlarged; they had weighed one hundred and eighty-four and one hundred and fifty-six grammes respectively and had had a polycystic appearance. It was doubtful in view of the comparatively slight increase in size of these kidneys whether the condition was polycystic disease.

The fourth specimen was the kidney of a woman, aged forty-two years, who had been admitted under Dr. Cudmore on September 9, 1923, and had died on September 11, 1923. The patient had had high fever and signs of pyæmia. The autopsy had revealed abscesses in both breasts (the patient had been suckling her baby), pyæmic foci in the lungs and an abscess near the *os pubis* which had given rise to acute periostitis and osteo-myelitis of that bone on the left side. *Staphylococcus aureus* had been cultivated from the lesions. Incidentally it had been found that both kidneys were typically polycystic. The left kidney had weighed five hundred and thirty-nine grammes and measured nineteen by six centimetres and the right seven hundred and fifty-eight grammes and measured twenty-two by eleven centimetres. The cysts varied in size up to four centimetres in diameter. Scattered over the surface of the liver there were small cysts the size of a pin's head up to a little larger. On section these were fewer in number than on the surface. There was a small angioma of the right lobe of the liver.

The last kidney was that of a male, aged forty-six years, who had been admitted under Dr. Cudmore on September 14, and had died on September 16, 1923. The patient on admission had been semi-comatose. He had not voided urine for twenty hours. A large indefinite mass had been felt in the left hypochondrium. The patient had been subjected to operation. A large polycystic kidney had been found and a stone had been palpated in its pelvis. Several small stones had been removed and with difficulty a large stag's horn calculus. The first gush of fluid had been purulent. The patient had not rallied. The lungs had been remarkable by the absence of pigmentation (the patient had lived a country life). Both kidneys had been greatly enlarged and polycystic. The left kidney had weighed 1.17 kilograms and measured twenty-one by eleven by eight and a half centimetres and the right had weighed 1.36 kilograms and measured twenty-one by eleven by eight centimetres. The surfaces had been irregular from numerous thin-walled cysts up to three centimetres in diameter. The pelvis of the left kidney had been congested and dilated and had contained some remnants of a soft calculus with a pale yellowish centre and darker crust. The liver had weighed 1.74 kilograms. Scattered over the surface and especially near the diaphragmatic aspect there had been a number of small cysts rather suggestive of gas vesicles, varying in size from a pin's head up to two centimetres in diameter. The larger ones looked like blisters and had an irregular contour. There had been a few scars suggestive of cysts that had burst. On section the liver substance had appeared to be honeycombed with small cysts up to one centimeter in diameter; the larger cysts had been loculated.

Ruptured Kidney.

DR. H. S. NEWLAND, D.S.O., showed a specimen of a ruptured right kidney from a young male adult. While performing the giant swing at a gymnasium the man had released his hold and had fallen. His right loin had struck the knee of an onlooker. He had suffered great pain after the accident and had passed blood in his urine. He had been admitted to the Adelaide Hospital on the following day when the acute pain had still been present. There had also been a small amount of blood in the urine. The muscles in the right loin and right side of the abdomen had been rigid and great tenderness had been present. There had been no free fluid in the abdominal cavity. It had been decided to watch the patient.

In the course of the next few days a swelling had formed in the right loin and flank. Cystoscopy had shown

blood-stained urine flowing from the right ureter. The left ureteral orifice and the urine issuing from it had appeared to be normal.

An incision had been made in the right loin and extravasated blood had been found in the perirenal fat. On excising this a cavity had been disclosed containing stale blood and urine. Lying free in the cavity had been the lower pole of the right kidney. The remainder of the right kidney had then been removed.

The patient had made a good recovery.

Cystic Kidney.

Dr. Newland also showed a cystic left kidney removed from a middle-aged woman. It had formed a large abdominal tumour which could be pushed almost to the right of the mid-line of the sub-umbilical region. The tumour had been partly cystic and partly solid. The lower pole of the spleen had been felt under the left ribs. No reaction to the hydatid complement fixation test had been obtained. Vaginal examination had revealed that the tumour had no connexion with the uterus or ovary. The urine had been normal and nothing abnormal had been found on cystoscopy.

As the nature of the tumour was in doubt, an abdominal incision had been made and the tumour had been found to be retro-peritoneal and arising in connexion with the left kidney. A left lumbar incision had been made and the kidney removed.

The specimen consisted of a large cyst the size of a fœtal head which replaced the lower third of the kidney. The upper two-thirds of the kidney contained several small cysts. The contents of the cysts were clear fluid.

Blood Pressure Readings in Anæsthetic Work.

DR. GILBERT BROWN then read a paper on "Blood Pressure as a Criterion of Safety in Anæsthesia" (see page 53).

DR. STEELE SCOTT thanked Dr. Brown for his most excellent paper and also for the very scientific way in which he had prepared all his data.

DR. GERALD HAYWARD thanked Dr. Gilbert Brown for his paper and said that the subject was of the greatest interest to anæsthetists. He personally had always relied on the condition of the pulse by touch. He fully recognized that the proposal of estimating the blood pressure was ideal and of great advantage in fully equipped hospitals, but in order to carry it out perfectly it required a trained assistant, as the man who was administering the anæsthetic, needed to devote his whole attention to that one object. In a great many cases especially in the country the services of a trained assistant were not possible. The question of expense also entered largely into the transaction and as a rule if the position were put to the patient, he would in all probability take the risk of doing without the blood pressure estimation. The patient could usually be assured that the risk was a nominal one and that there was no necessity for the measurement of the blood pressure, although the patient might be given the option. When the patient's condition was more serious, it was advisable that the blood pressure be taken before the operation and if it were probable that the operation would be a prolonged one, it might be advisable that the method of administration should be as recommended by Dr. Gilbert Brown. He thanked Dr. Brown for a most interesting and instructive address.

DR. G. R. WEST expressed his thanks to Dr. Brown for his paper. He thought that the practical difficulties of estimating blood pressure while conducting anæsthesia were against it becoming a routine practice for ordinary operations, but in cases of gravity he thought it would be of great value. Dr. Brown was to be congratulated on his ingenious modifications of apparatus which made such estimations at all practicable. Measurement of blood pressure before operation would be an easy matter and Dr. Brown's rules should be of great value in assessing the risks in the less severe operations on patients with cardiac or other affections. Dr. West asked Dr. Brown if he had observed any appreciable or prolonged fall of pressure from induction of anæsthesia with ethyl chloride or chloroform.

DR. L. L. DAVEY asked Dr. Brown whether he thought the actual taking of the blood pressure by the constricting band round the arm had any effect on the blood pressure.

DR. JOHN CORBIN said that he considered that it was of great importance to have the blood pressure estimated at intervals as advocated by Dr. Brown. He spoke of a patient on whom he had performed an operation for the removal of a goitre. At one time during the operation he had asked the anæsthetist how the patient was and he had been informed that the patient's condition was quite good; he had proceeded further with the removal of the other lobe of the thyreoid gland. About ten minutes later the patient had stopped breathing. Artificial respiration had been carried on for over an hour, but without any signs of returning life. Dr. Corbin said that he considered that if the anæsthetist had been taking the blood pressure as advocated by Dr. Brown, the pressure would most probably have shown a continuous fall. He would have been warned and could have packed the wound and returned the patient to bed and if necessary finished the operation at a later date.

DR. B. SHORNEY said that he had found Dr. Brown's method of giving anæsthetics and taking the blood pressure most useful for two patients over sixty years of age with frontal sinus affections. It had been imperative to operate on them for the intolerable headache and the fear of brain abscess. Dr. Brown had advised him not to attempt a radical antral operation as well as radical frontal operation on one of the patients and in consequence the antrum only had been opened into the nose. A second radical frontal and antral operation had been performed in one sitting on the other patient, as Dr. Brown had told him that the patient would be able to stand the longer anæsthetic without danger.

DR. BROWN in reply thanked members for listening to his rather long paper. He said that the preparation of the paper had taken a very long time as all the charts had to be copied out again as the original ones which had been done at the operation, were soiled. He showed two types of anæsthetic chart which he used, one large and the other a pocket size. In reply to the several speakers who had thought that the actual taking of the blood pressure was very difficult and very apt to allow the anæsthetist to take his concentration off the giving of the anæsthetic, Dr. Brown said that when he first started to take the blood pressure readings, he had found it very difficult and also had found that his readings were not always accurate. However, after a little practice and when he had discovered the best and most convenient methods for doing it, the actual performance had become mechanical and quite easy. He had found that in teaching students to take blood pressure readings during an operation they only managed to take a pressure about once in every fifteen minutes. After they had done it several times they had managed to do it quite easily every five minutes without any fuss and without forgetting to give the anæsthetic. In reply to Dr. Davey he did not think the constricting band had any appreciable effect on the pressure. He was unable to say what was the effect of ethyl chloride and chloroform on the pressure at induction, as at that time it was impossible to take the readings since the whole attention of the anæsthetist was usually concentrated on the induction of the anæsthesia. He thanked members for their reception of his paper.

NOMINATIONS AND ELECTIONS.

THE undermentioned has been nominated for election as a member of the New South Wales Branch of the British Medical Association:

ASHER, MAISIE HEATH, M.B., Ch.M., 1923 (Univ. Sydney), 30, Eglinton Road, Glebe Point.

Correspondence.

"INSULIN."

SIR: Judging from the Australian press, medical and lay, there appears to be some misconception abroad of the use of "Insulin" in diabetes.

I suppose there is no hospital in London where more "Insulin" is routinely given than at St. Thomas's and no abler exponent of the whole subject than Professor Maclean, its medical director.

A few weeks ago he opened a discussion before the Royal Society of Medicine on the use of "Insulin" in general practice. To the astonishment of many he indicated how the general practitioner might use "Insulin" without the concurrent blood sugar estimations, giving him at the same time most explicit directions how to keep well within the bounds of safety.

Now, if any man in London has the right to insist on blood sugar estimations being made in every case by every man who handles "Insulin," it is Professor Maclean. His method of blood sugar estimation is simplicity itself in technique and time. His outfit for the test is selling all over England and Scotland like hot cakes; and yet it is this very professor who tells the general practitioner that with certain safeguards he can use "Insulin" in his practice without it: surely a unique example of a man being bigger than his method.

Professor Maclean's ideal in all his work, as anyone conversant with his books cannot fail to observe, is simplicity with efficiency. He has no little regard for the average general practitioner whom it is the habit in London to rather carefully "shepherd." He takes it that the average general practitioner reads his journal, attends his meetings and tries to keep himself abreast of his work generally and, moreover, that in his work there occur emergencies that call for more initiative and more courage than might be found in many a London laboratory worker. Now, as to the details that prevail in the diabetic ward at St. Thomas's I do not propose to say anything in this letter. There is an old Alfred Hospital resident here at present, from Melbourne—Dr. Korkill, who is closely associated with the "Insulin" work under Professor Maclean. With the latter's kind approval, he is sending you by next mail a short practical résumé of the routine handling of the diabetic work at St. Thomas's. It cannot fail to be helpful and if it will clear the ground for "Insulin" treatment to be pursued under the St. Thomas's conditions of safety, simplicity, efficiency, it will have achieved much.

In conclusion, let it not be understood that Professor Maclean discourages the blood sugar estimations. Far from it. He insists on it as a routine in all his cases; but the question of it being absolutely necessary for the general practitioner is another matter.

Yours, etc.,

J. F. MACKEDDIE.

London,
November 28, 1923.

HERPES AND VARICELLA.

SIR: On looking through *The British Medical Journal* of October 6, 1923 (page 638), I came upon a note by a physician who, seeing a case of herpes in the mother, was able to state that possibly the children would develope varicella, which actually happened.

A few days ago I saw the reverse.

A middle-aged woman consulted me with a well marked herpetic eruption on the anterior and medial aspect of the right thigh. She stated that she thought it might be chicken-pox as the grandchildren, with whom she lived, were just recovering from varicella.

Is it not more usual for varicella to follow herpes than the reverse, as in my case?

Yours, etc.,

A. E. VIVIAN.

Walworth, Old South Head Road,
Rose Bay (undated).

Proceedings of the Australian Medical Boards.

QUEENSLAND.

THE undermentioned have been registered, under the provisions of the *Medical Act of 1867*, as duly qualified medical practitioners:

LYNCH, ALBAN JOSEPH, M.B., Ch.M., 1923 (Univ, Sydney), Brisbane.

WOODHEAD, GEORGE ROEBUCK, M.B., B.S., 1919 (Univ. Durh.), Taringa.

TASMANIA.

THE undermentioned has been registered, under the provisions of *The Medical Act, 1918*, as a duly qualified medical practitioner:

PIGOTT, LOUIS MICHAEL, M.B., (Univ. Sydney), Launceston.

Naval and Military.

APPOINTMENTS.

THE following appointments, changes *et cetera* have been promulgated in *Commonwealth of Australia Gazette*, Nos. 80, 84 and 86, of November 15 and 29 and December 13, 1923:

Australian Military Forces.

FIRST MILITARY DISTRICT.

Australian Army Medical Corps Reserve.

HONORARY MAJOR R. THOMPSON is retired under the provisions of Australian Military Regulation 152 (1), 18th October, 1923.

Australian Army Medical Corps.

To be Majors—CAPTAINS C. SHELLSHEAR and R. M. ALLAN, M.C., 1st July, 1923.

SECOND MILITARY DISTRICT.

Australian Army Medical Corps.

To be Lieutenant-Colonel—MAJOR C. H. E. LAWES, 1st July, 1923. MAJOR C. H. E. LAWES reliquishes the command of the 14th Field Ambulance, 30th June, 1923. MAJOR (HONORARY) LIEUTENANT-COLONEL C. W. THOMPSON, D.S.O., M.C., is transferred to the Unattached List, 1st November, 1923.

Australian Army Medical Corps Reserve.

The resignation of HONORARY CAPTAIN R. A. RANKINE, O.B.E., of his commission is accepted, 25th October, 1923.

THIRD MILITARY DISTRICT.

Reserve of Officers.

CAPTAIN J. R. DONALDSON is transferred to the Reserve of Officers, 5th Military District, 1st November, 1923.

Australian Army Medical Corps.

To be Captains (provisionally)—NOEL MIDDLETON GUTTERIDGE and NORMAN MCLEOD, 10th November, 1923.

CAPTAIN W. J. NEWING is appointed from the Reserve of Officers, with regimental seniority next after Captain (provisionally) I. V. YOFFA, 1st November, 1923.

Australian Army Medical Corps Reserve.

The resignation of HONORARY CAPTAIN W. H. ORCHARD of his commission is accepted, 31st October, 1923.

FIFTH MILITARY DISTRICT.

Australian Army Medical Corps.

Reserve of Officers.

CAPTAIN J. R. DONALDSON is transferred from the Reserve of Officers, 3rd Military District, 1st November, 1923.

Congress Notes.

TRANSACTIONS OF THE AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

IT has been found that the papers presented to the first session of the Australasian Medical Congress (British Medical Association) would occupy in the aggregate a much larger space than was originally estimated. The Executive Committee has therefore requested many of the authors to reduce the length of their contributions. This step has unfortunately necessitated a delay in the publication of the Transactions.

Books Received.

COMMON SYMPTOMS OF AN UNSOUND MIND, by G. Rutherford Jeffrey, M.D., F.R.C.P.E., F.R.S.E., with a Foreword by Sir James Crichton Browne, M.D., LL.D., D.Sc., F.R.S., F.R.S.E.; 1923. London: H. K. Lewis and Company, Limited; Crown 8vo., pp. 286. Price: 7s. 6d. net.

PRACTICAL LOCAL ANESTHESIA AND ITS SURGICAL TECHNIC, by Robert Emmett Farr, M.D., F.A.C.S.; 1923, Philadelphia and New York: Lea and Febiger; Royal 8vo., pp. 547, with 219 illustrations and 16 plates. Price: $8.00 net.

QUAIN'S ELEMENTS OF ANATOMY, Eleventh Edition, Edited by Sir Edward Sharpey Schafer, LL.D., Sc.D., M.D., F.R.S., Johnson Symington, M.D., F.R.S. and Thomas Hastie Bryce, M.A., M.D., F.R.S.; In Four Volumes; Volume IV., Part II., Myology, by T. H. Bryce, with Sections on the Actions of the Muscles, by Thomas Walmsley, M.D.; 1923. London: Longmans, Green and Company; Royal 8vo., pp. 320, with 53 coloured plates and other illustrations. Price: 25s. net.

RULES FOR RECOVERY FROM PULMONARY TUBERCULOSIS: A LAYMAN'S HANDBOOK OF TREATMENT, by Lawrason Brown, M.D.; Fourth Edition, thoroughly revised; 1923. Philadelphia and New York: Lea and Febiger; Crown 8vo., pp. 225. Price: $1.50 net.

TWO LECTURES ON GASTRIC AND DUODENAL ULCER: A RECORD OF TEN YEARS' EXPERIENCE, by Sir Berkeley Moynihan; 1923. Bristol: John Wright and Sons, Limited; Royal 8vo., limp cover, pp. 48. Price: 2s. 6d. net.

Medical Appointments.

DR. F. S. SCOTT (B.M.A.) has been appointed a Member of the Nurses Registration Board of South Australia.

* * * *

The following appointments have been made at the Royal Alexandra Hospital for Children, Camperdown, New South Wales: DR. MARGARET HARPER (B.M.A.), as Honorary Physician; DR. RAYMOND GREEN (B.M.A.), as Honorary Assistant Physician; DR. R. J. TAYLOR (B.M.A.), as Honorary Relieving Assistant Physician.

* * * *

DR. J. H. CHAUNCEY and DR. P. F. V. CROWE (B.M.A.) have been appointed Acting Medical Officers of the Venereal Clinics and Dispensaries, Brisbane, and of the Venereal Isolation Hospital, South Brisbane.

* * * *

The undermentioned have been appointed Members of the Fauna and Flora Board of South Australia: DR. E. A. JOHNSON (B.M.A.), nominated by the Minister; PROFESSOR F. WOOD JONES, nominated by the Council of the University of Adelaide.

* * * *

DR. E. G. DERMER (B.M.A.) and DR. J. P. WILLIAMS (B.M.A.) have been appointed Public Vaccinators at Port Fairy and Murchison, respectively, in Victoria.

* * * *

DR. G. L. EWAN has been appointed Medical Officer, Department of Mental Hospitals, New South Wales.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, . Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmain United Friendly Society's Dispensary Friendly Society Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phœnix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

JAN. 22.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JAN. 23.—Victorian Branch, B.M.A.: Council.
JAN. 25.—Queensland Branch, B.M.A.: Council.
JAN. 29.—New South Wales Branch, B.M.A.: Organization and Science Committee; Medical Politics Committee.
FEB. 1.—Queensland Branch, B.M.A.: Branch.
FEB. 6.—Victorian Branch, B.M.A.: Presentation of Balance Sheets, 1923.
FEB. 8.—Queensland Branch, B.M.A.: Council.
FEB. 8.—South Australian Branch, B.M.A.: Council.
FEB. 13.—Tasmanian Branch, B.M.A.: Branch.
FEB. 14.—Brisbane Hospital for Sick Children: Clinical Meeting.
FEB. 20.—Victorian Branch, B.M.A.: Council.
FEB. 22.—Queensland Branch, B.M.A.: Council.
FEB. 28.—South Australian Branch, B.M.A.: Scientific Meeting.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and book-sellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.